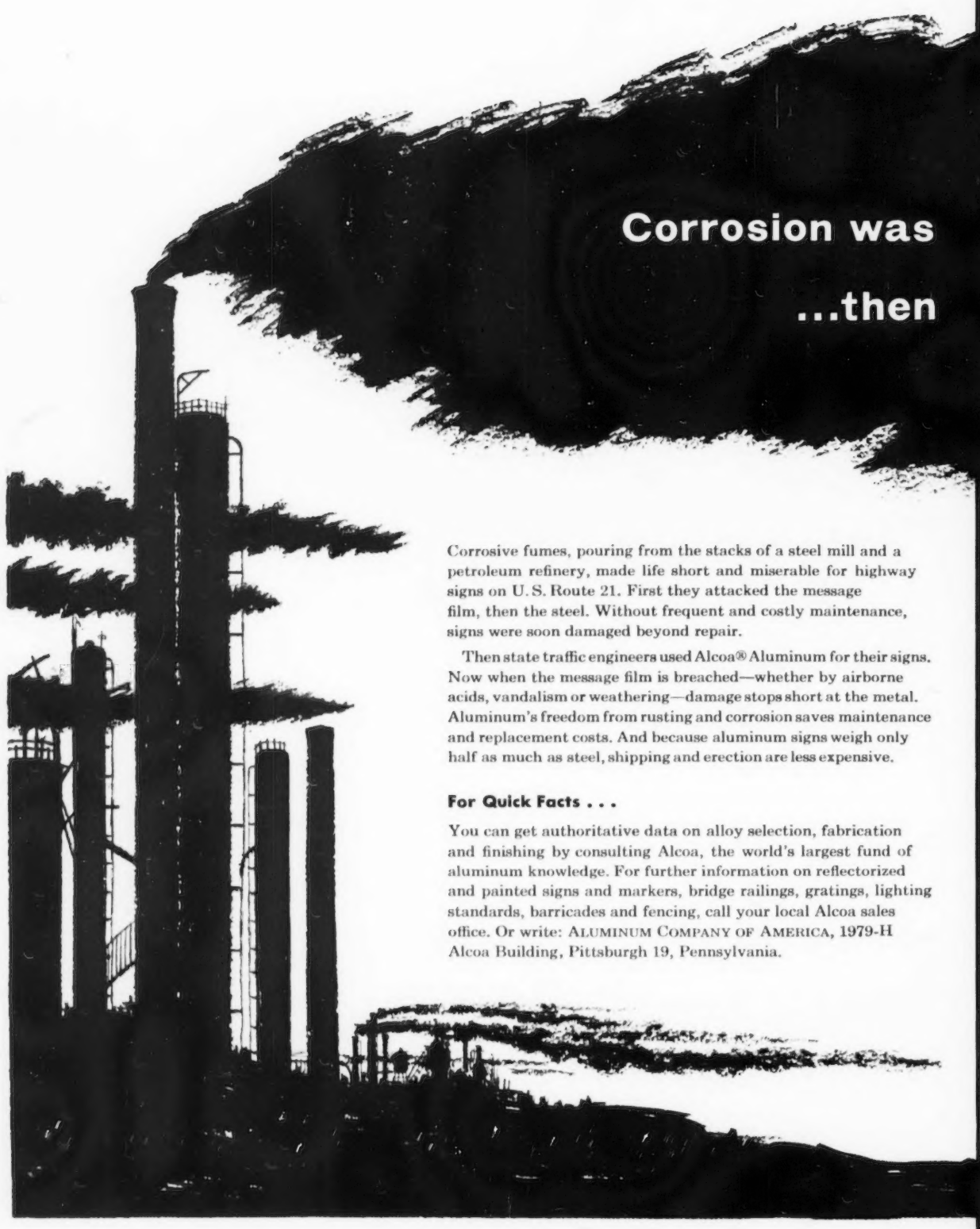
AUGUST, 1954

Traffic Engineering

Gulf Freeway near Houston, Texas

- Highway and Traffic Problems in Unincorporated Areas of Los Angeles County
- A Study of the Pigeon Hole Garage
- Pedestrian "Scramble" Control

Official Publication of the Institute of Traffic Engineers



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In This Issue

Highway and Traffic Problems in Unincorporated Areas of Los Angeles County 403
Guy D. McDonald

A Study of the Pigeon Hole Mechanical Garage at H. S. Manchester, Inc., Madison, Wisconsin 406
R. H. Burrage

Pedestrian "Scramble" Control 413
Robert D. Dier

Reversible Sign Technique 415
John W. Zimmerman

Mid-Year Roundup of Toll Roads 418
The Editorial Staff

Yearbook Changes 422

Traffic News 425

Positions Available 428

Miscellanea 429

Strictly Business 431

Letters to the Editor 434

Secretary's Column 435

Index to Advertisers ..... Inside Back Cover

COVER: The GULF FREEWAY is an ultra-modern thoroughfare spanning the 49 miles from Houston to Galveston, Texas. This aerial view looking toward the Freeway's northern terminal and downtown Houston in the distance, was taken over the city's outskirts and shows the traffic interchange of U. S. 75, State Highway 225, and State Highway 35.

DEFINITION: Traffic Engineering is that phase of engineering which deals with the planning and geometric design of streets, highways, and abutting lands, and with traffic operation thereon, as their use is related to the safe, convenient, and economic transportation of persons and goods.

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Frankly Speaking

THE TRAFFIC ENGINEERING PROFESSION is dedicated to public service. As Traffic Engineers we are engaged in the planning, design and operation of transportation and terminal facilities to provide safe, convenient and economic means of communication for our fellow beings. Whether the specific task is large or small, it is seldom an easy one nor are the rewards emblazoned in plaques or monuments or even in salaries.

Physical improvements that make better use of existing facilities, though not as spectacular perhaps as modern new terminals and express arteries, are nevertheless effective and indeed essential if our existing street and highway system is to be operated at its maximum efficiency. It is in this area of traffic control and regulation that the Traffic Engineer has been most successful. However, these achievements will have been lost if his energies are allowed to wane. The Traffic Engineer must constantly look to the future and plan boldly for meeting traffic requirements in terms of developing adequate transportation facilities, reducing accidents and relieving delay and congestion.

Our street and highway system suffers from intolerable congestion as a result of the continuing increase in traffic and the miserable lack of adequate streets, highways and off-street terminals to handle this traffic. Public apathy makes the problem even more difficult. Limited budgets test the resourcefulness of the Traffic Engineer in providing needed improvements.

As we approach some of these traffic problems we sometimes wonder, "Is there really a solution, even if my budget is doubled, tripled or quadrupled?" In studying these problems the Traffic Engineer must possess initiative, imagination, courage and agressiveness and the persistence to overcome apparently insurmountable obstacles for, after all, his decisions effect the welfare of many people. In his efforts to solve these problems, the Traffic Engineer must necessarily become accustomed to pressures and criticisms and, in spite of it, maintain an impartial and professional approach to the rendering of public service.

As members of the Traffic Engineering profession we can justly take pride in the continued traffic improvements that are taking place throughout our country and providing a better place to work and live. It is this rendering of public service to one's fellow man that should give us great satisfaction and help us to carry further our responsibilities as Traffic Engineers.

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Director, District 1

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Highway and Traffic Problems in Unincorporated Areas of Los Angeles County

By Guy D. McDonald (Mem., ITE)
Traffic Engineer, Los Angeles County, California

The following article is based on a paper which Mr. McDonald gave before the Los Angeles Traffic Advisory Board last year. Editor

ACCORDING TO THE LATEST information there are now approximately two and one-quarter million registered vehicles in Los Angeles County. This accounts for two-fifths of the entire number of licensed vehicles within the State. Since 1940 the population of the Greater Los Angeles Area has increased about sixty per cent. It has doubled since 1930 and increased over four and one-half times since 1920. The population of the County is now almost four and one-half million. The estimated population of the unincorporated area is about one million.

This all adds up to a traffic problem which is further intensified by the trend in population changes. Decentralization of both homes and industries is continuing at a rapid pace. The result is a continuous cross-county surge of passenger cars and trucks. To say that our present road system is taxed beyond its design capacity is a mild statement indeed.

The County Road Department is financed and organized, and is attempting to cope with part of the overall problem in the following manner. The functions may be stated quite briefly. Under the directions of the Road Commissioner and his staff, the Department is responsible for the construction and maintenance of highways and bridges; the placement and maintenance of traffic signs, devices and markings; the installation and maintenance of traffic safety lights and street lighting systems in County Lighting Districts and Lighting Maintenance Districts.

The Department is financed entirely from special funds, receiving nothing from the General Fund or the Salary Fund. Figure 1 shows the source of income and the expenditure for the past fiscal year. Most of the money, about eighty-five per cent, is from the State Highway Users Tax Fund. The next principal source is from fines and forfeitures. There are several other relatively minor sources which go to make up the budget. The total amount received from these sources for the fiscal year 1951-1952 was about eighteen and one-quarter million dollars. It should be mentioned, however, that the yearly budget is always in excess of the yearly revenue because of unexpended "Carry-overs" from previous years. The amount budgeted for this fiscal year (1952-1953) is approximately twenty-nine and one-half million dollars. Also reflected in the work of the Department are non-budgeted items involving County Improvement Districts, issuances of permits, inspection work, and subdivision activities. During the past year, contracts have been let or plans prepared for jobs initiated by assessment districts for a value of more than one and one-half million dollars. Plans were approved for 125 miles of roads in 225 tracts. These roads were bonded by private capital for almost seven million dollars.

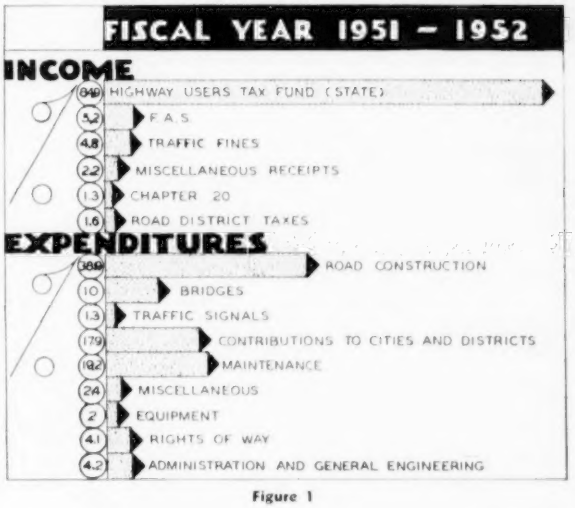


Figure 1

At first glance it would appear that the Department is adequately financed. However, the amount of money available for highway purposes appears almost insignificant when viewed against the background of existing critical deficiencies of the County Primary Highway System.

A deficiency survey conducted by the Department in 1949 revealed that of the 1,600 miles which comprise the primary system, 1,000 miles were deficient. In general, the basis for this deficiency was lane capacity and it indicated needed improvements during the ten year period 1949 to 1959. The estimated cost of improving the majority of the one thousand miles to a four lane standard was one hundred sixty-two million dollars. An additional survey completed by the Department in July, 1952, indicated a need for immediate improvement of five hundred miles of roads in the primary system, at an estimated cost of eighty-four million dollars.

Some of the roads in the County system became deficient almost over night because of extremely large areas being subdivided on a wholesale scale. The Lakewood district is a typical example. It suddenly developed into an area with an estimated population of 100,000. Consequently, the County is faced with the situation of having two-lane feeder roads, which were formerly country roads, transformed quickly into highly important, but deficient, highways linking the new expanded community with the Metropolitan area.

This subdivision leap-frogging is continuing toward fringe areas of the County. There is the proposed intensive development of the McNally Ranch in the La Mirada area near the Orange County line. Still another example is the rapidly developing Palmdale area which is being converted from a quiet desert community into a major aircraft industrial center. Our existing feeder roads at this time are inadequate to serve the demands of these new developments.

Signalized intersections on County roads are in some cases a source of congestion. There are now 245 such locations under County jurisdiction. At a number of these intersections lane capacity is woefully deficient and during peak hours traffic movement is brought to a standstill for unreasonably long periods.

At a limited number of the more seriously congested intersections of two lane roads we have widened the traveled ways for distances of five or six hundred feet to provide for four lanes of traffic in all directions. At the present time we have a partial list of critically deficient intersections (twenty-five in number) where similar treatment will be applied as funds become available. The cost of this improvement is estimated to be eight hundred seventy-five thousand dollars.

There is, of course, a practical limit as to how wide an intersection approach can be made commensurate with safety. Excessive widths introduce problems of traffic weaving from one side to another for the purpose of making turns. Also, the extent of widening is limited by the length of transition distances required.

It is known that the prohibition of left turns increases to a considerable degree the volume of traffic that an intersection can accommodate. However, in rural and intermediate areas, left turn prohibitions are not always feasible because of the absence of alternate routes to accomplish the desired change of direction. Consequently, the use of three phase and even four phase signal control has been employed, which results in critical reduction of intersection capacity.

And so, we continue to look for other means to increase capacity at major intersections without resorting to the construction of expensive grade separations. Freeways have established the principle of the cloverleaf turn, whereby a change of direction to the left is accomplished by means of circling to the right.

This principle is also adaptable to major highways in the form of a modified clover-leaf at grade. The size of the flat clover-leaf is flexible. It can be made to encompass any reasonable area above a given minimum turning radius. If constructed in conjunction with new subdivision developments the costs would be relatively minor. In fact, a modified clover-leaf which will eliminate turning movements at the intersection of two major highways is now being planned by the Road Department in connection with the McNally Ranch Subdivision.

Intensively developed areas would, naturally, present a greater problem. However, it is believed that the increase in intersection capacity would in a number of cases more than justify the cost of a flat clover-leaf. For the purposes of illustration, a typical intersection with modern three phase signal control has been chosen for analysis. It was selected because it is a known congestion point operating with maximum traffic loads. Both roadways are eighty feet between curbs. The heavy northbound left turn has determined that the most efficient method of three phase operation is the separation of northbound and southbound movements with the east-west movements occupying the third phase.

Figure 2

Under three phase operation the intersection capacity per hour is 4,830 vehicles. Under two phase operation, with left turns prohibited by means of a flat clover-leaf, the computed capacity of the intersection is 6,550 vehicles per hour. This is a net increase of 1,720 or 35.6 per cent. The Road Department intends to make a very careful study of this form of intersection improvement with the view of applying it where it is feasible to do so.

In addition to the so-called standard intersection problems there are literally hundreds of intersection problems of strictly a localized nature. These exist at industrial plants, parks, and other places where surges of vehicular or pedestrian traffic occur perhaps twice a day and are of short duration. There is no question that these locations which generate surge traffic are sources of potential hazard and actual congestion. This matter is now being closely studied with the view of relieving conditions by channelization and, perhaps, traffic signals at key points such as quarter mile intervals. Further, industrial plant management and labor are being requested to study internal operations within their parking lots so that the most efficient location and use of entrances and exits may be obtained.

And then there is the ever present school child pedestrian problem which exists at thousands of locations throughout the County. In fact, insofar as our Traffic Section is concerned, this school problem is one of our biggest headaches. Experience has shown that many requests from school boards and Parent-Teacher Association groups for all manner of traffic control devices around schools are frequently fostered by emotionalism and have little relation to factual need. Regardless of this fact, the Department works very closely with all those concerned with school child safety. When a hazard does exist, every effort is made to correct it through the medium of engineering, education, enforcement, or all three.

The figures shown in Figure II may be of interest:

(a) Of the ten injured near schools, five were using provided crosswalks and five were playing in street and not using crosswalks.

(b) Only fifteen per cent of the cases involved driver violations—ten per cent being cited for exceeding safe or posted speed limits. The greatest contributory cause was children suddenly dashing into the street. Twenty per cent in the first two age groups ran out from behind parked cars.

(c) Eighty-five of the accidents in the three to five age group occurred on minor residential streets carrying very light traffic. In the six to seventeen age group, fifty per cent of the accidents occurred on minor residential streets, the other fifty per cent taking place on major highways. In the six to seventeen age group there were fifty-five injuries during the period of one year. It is of interest to note that approximately fifty per cent of these injuries occurred at intersections controlled by either stop signs or traffic signals. It is also interesting to note that only one of these accidents occurred where a crossing guard was on duty.

Figure III gives the County-wide picture of traffic fatalities in a comparison between 1951 and 1952. It also shows the situation in relation to the jurisdiction involved. The figures may differ slightly from those previously released by the City of Los Angeles, the California Highway Patrol, and other agencies. However, they were taken from reports of the Coroner's Office and, therefore, should be substantially correct.

It is my understanding that the round sum used by the National Safety Council to estimate total economic loss resulting from traffic accidents is now about one hundred thousand dollars per fatality. If we apply this figure to the 1952 County of Los Angeles fatality record, we arrive at an economic loss of seven hundred eighty-four million dollars.

The combination of congestion, accidents, and economic loss leads us in an unhappy circle back to the problem at hand. In addition to the things that I have mentioned, what, from the County level, are we doing to improve traffic conditions and reduce accidents?

Bridge construction is playing an important part. Prior to 1945, bridges across the Los Angeles, Rio Hondo, and San Gabriel Rivers consisted in general of two lane wooden structures at rather infrequent intervals. With the new trend in industrial and residential development, it was realized that wider bridges at more frequent intervals was an absolute necessity. Consequently a very extensive bridge construction program was undertaken. The expenditure amounted to approximately eight million seven hundred thousand dollars and represented fifty-five modern, reinforced steel and concrete structures.

The major projects now under construction include structures at the following locations:

Florence Avenue over the Rio Hondo
Garfield Avenue under the Union Pacific Railroad
Rivergrade Road under the Pacific Electric Railroad
Ramona Boulevard over Rivergrade Road
Ramona Boulevard over San Gabriel River
Washington Boulevard over San Gabriel River
Washington Boulevard over Southern Pacific Railroad

The cost of these structures, which will provide for four or more lanes, is about eight hundred thousand dollars.

Highway improvement projects now under construction or in the design stage amount to approximately four million dollars. Included are sixteen and one-half miles of roadway being improved to at least a four lane standard. The increasing reliance on stage construction due to increasing costs and more extensive type of improvement should be mentioned. This means the closest cooperation and coordination of planning between County, State, Cities, and other interests. The State Division of Highways is particularly involved due to the increasing influence of freeway construction on the County road system.

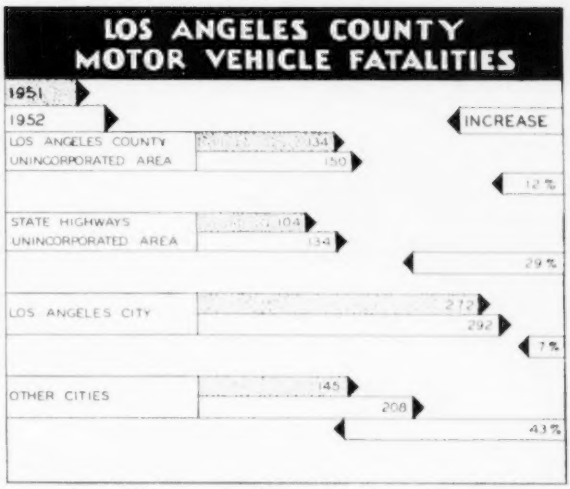


Figure 3

This brings us to a point of question which apparently has caused some concern in highway circles: "What is the policy of the County in regard to financial participation in the State highway and freeway program? This can best be answered by Road Commissioner Kennedy's statement, in August, 1952, to the Joint Legislative Fact Finding Committee on Highways: "It is recognized by this County that the State highway and freeway system of the County is the backbone of the highway system, and should be given first consideration in solving the highway deficiency problem. It is not considered within the realm of financial possibility to secure all of the funds necessary to correct all of the deficiencies on City Streets, State Highways, and County Roads; consequently, the need and necessity of devoting the meager, additional funds which may be made available for expediting the State freeway system is of first importance."

Let us next take highway illumination and traffic control measures. During the past fiscal year the Lighting District Fund and the Lighting District Maintenance Fund amounted to nine hundred forty-six thousand dollars, involving one hundred thirty-four Lighting Districts with a total of 29,163 lights. A substantial increase in lighting functions is indicated by a budget request of about one and one-half million dollars for the fiscal year 1953-1954. This involves one hundred eighty-one Lighting Districts with a total of more than 34,000 lights. In addition, 102 intersections and one bridge are provided with high intensity safety lighting.

In accordance with the recommendation of the Engineering Division of the Governor's Traffic Safety Conference, the Road Department is searching out and applying corrective treatments to accident prone intersections. Traffic signals are being installed at the rate of about forty intersections per year. During the past fiscal year, boulevard stop signs were placed at eighty-five isolated intersections. It is perhaps of interest, or consternation, to note that in unincorporated areas of the County, there are about 3,950 intersections where stop signs are in place. Regulatory measures such as speed restriction zones, the prohibition of parking and turning movements (with appropriate signing) are being established where necessary. Almost 3,000 miles of traffic stripes are in place and there are more than 20,000 warning and regulatory pavement markings on County roads. The annual cost of

(Continued on page 417)

A Study of the Pigeon Hole Mechanical Garage at H. S. Manchester, Inc., Madison, Wisconsin

R. H. Burrage (Assoc. Mem. ITE)

Highway Engineer, Terminal Facilities Section,
Bureau of Public Roads, Washington, D. C.

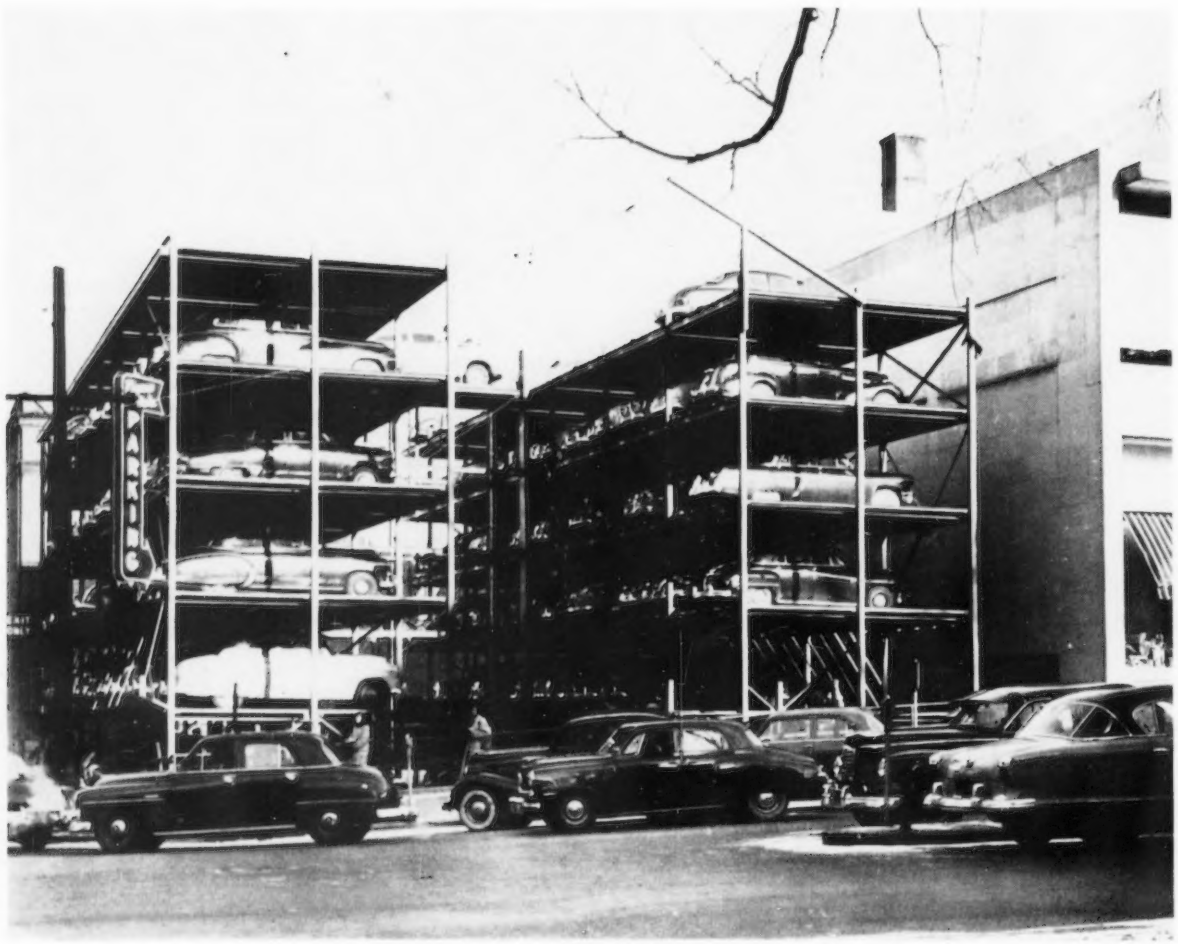


Figure 1
Pigeon Hole Garage, Madison, Wis.

THE EFFECT OF off-street parking on traffic operations on adjacent streets is significant to highway and traffic engineers responsible for administration, operation, and control of traffic. The development and increasing use of mechanical parking garages as a means of parking automobiles in off-street facilities is of considerable interest. A "Pigeon Hole" garage was recently opened in Madison, Wisconsin, by a large department store. A spot study of the operating characteristics of this garage was made by personnel of the Highway Planning Survey of the Wisconsin State Highway Commission in cooperation with the Bureau of Public Roads.

This garage, illustrated in the accompanying photograph (Figure 1), is a skeleton steel prefabricated structure, and consists of two stacks of 2-car stalls or pigeon holes facing each other across an aisle 20 feet wide. A mobile hydraulic

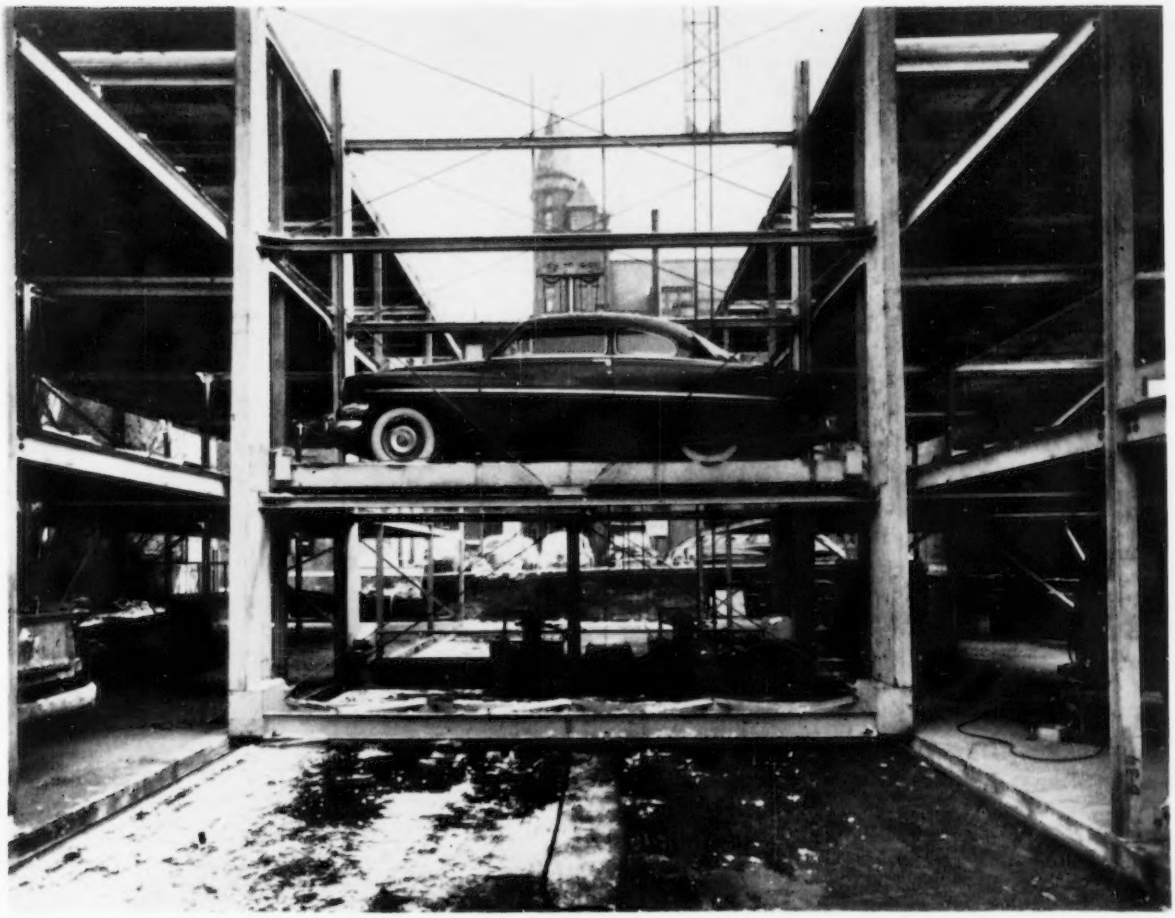


Figure 2
Traveling Elevator (in Spokane, Wash. garage)

elevator (Figure 2), manned by an operator and riding on rails, uses an automatic dolly (Figure 3), to extend under a car in the entrance stall, pick it up, and move it into the elevator. The elevator then moves simultaneously along the aisle and vertically to an empty stall where the car is deposited by the dolly, between stops which prevent rolling. Cars may be left locked and with the brakes on. The Madison garage replaced a 28-space lot, has five decks above the ground and is 14 stalls long and thus, including the ground level, has a nominal capacity of 168 cars. However, the use of various stalls for entrance reservoirs, exits, pedestrian walkways, etc., reduces its effective capacity to 146.

The Pigeon-Hole garage normally has no stairs, no facing, no sprinklers, and may be erected within 60 days. It may be built as high as 8 levels, is available in units, and thus is adaptable to areas of various dimensions. It may be welded, riveted or bolted, and so (unless welded) may be dismantled and moved to another location. The current cost of construction, above the ground is understood to be slightly over $1,000 per car space. Facing may be added where required by ordinance.

It is reported that the Pigeon-Hole Company now has ten garages of various capacities, in the country and in Venezuela. The Madison structure is owned and operated by H. S. Manchester, Inc., a large department store, for the benefit of its customers. The store and garage are open from 9:30 — 5:30 Tuesday, Wednesday and Friday, and from 12:00 — 9:00 on Monday and Thursday. There is no validation of tickets for store customers, and the fee is 25 cents for the first hour, 10 cents per hour thereafter. 12-15 store employees regularly use the garage, paying $5.00 per month. As shown in the accompanying sketch (Figure 4), the garage is immediately adjacent to the store. Cars enter the structure directly from the street, the only reservoir space being the two entrance stalls,[1] and leave from the opposite side of the structure. The car occupants follow the indicated path to a rear door of the store, and this path, using space which otherwise would be used for parking, is protected by a wire grill fence. Metal canopies have been added on each side of the structure to protect pedestrians from any drip from cars overhanging on the upper levels.

The Control and Ticket System:

As illustrated in Figure 5, control is through a semi-permanent manila card (one number for each stall) which is the garage record, and a permanent plastic-enclosed ticket, (one numbered for each stall) which is the customer's ticket. A board with pegs holds the customers' tickets, and thus shows at a glance which stalls are empty. These are issued in small batches to the entrance-reservoir doorman, who

[1]Since the study was made, the entrances have been changed to stalls 19-20 and 21-22.

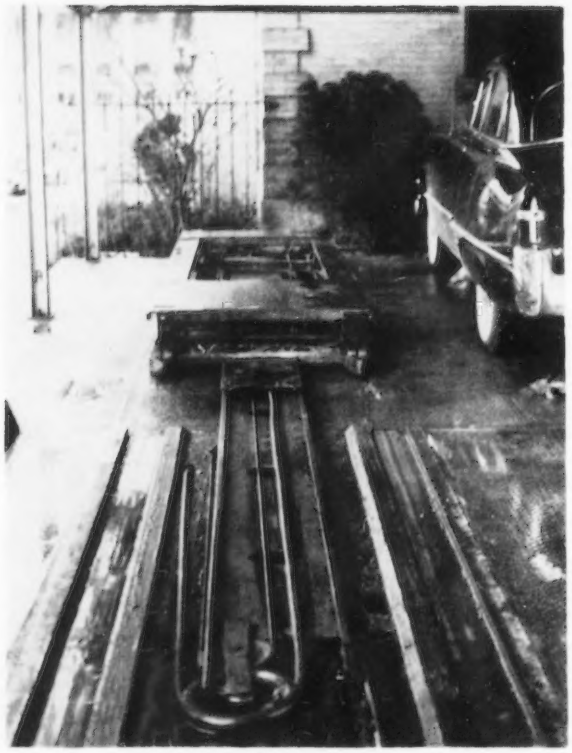


Figure 3
Dolly extended and raised

issues them to incoming parkers, at the same time placing on the windshield a card with a corresponding number (to tell the elevator operator where to store the car) and also at the same time advising the cashier, by a loud speaker system, that "No. — going up." The cashier then takes the garage-record card bearing that number from its rack, time-stamps it, and returns it to the rack.

A parker returning for his car presents his numbered ticket to the cashier, who takes the corresponding record card from the rack, time stamps the "out" time, calculates and collects the fee, and calls via loudspeaker for "No. — down." The garage-record card is used on both sides, hence serves for about 22 transactions.

The Operation:

Cars entering a reservoir stall are directed into position by a doorman, who issues the ticket, places the stall-number on the windshield, and lowers the antenna if necessary. All handling of cars is by the elevator operator, who by manual control spots the dolly under the car, causes the dolly to lift the car, and retracts it onto the elevator. If a car happens to be somewhat askew, he is able to square it into position by using the dolly to lift only the front axle, then moving the elevator and dolly a few inches sidewise.

With the car on the dolly and on the elevator the operator, using manual controls, moves the elevator along the aisle and vertically at the same time, to reach the designated stall. Because of the nature of the dolly operation, precise leveling is necessary, and this is accomplished by raising the elevator about a foot above the desired floor and then setting it back onto positive stops. The horizontal placement of the elevator need not be so precise, and is controlled manually.

At the Madison structure the usual operating force is three men, one acting as doorman, one as cashier, and one as elevator operator, the three shifting duties from time to time. At some Pigeon-Hole garages of smaller capacities the entire operation is by two men or even one. At larger installations, two or more elevators may be used.

The Study:

On December 9, 1952 the garage was observed and unit movement times were recorded. On December 10 (9:30-5:30) the parkers were interviewed, arrival times and durations were recorded, and street delays timed. On December 11 (12:00-9:00) receipt and delivery handling and unit movements were timed. As is often the case in such studies it developed that on December 11, when the important handling operations were being timed, a heavy snowfall appeared which severely reduced the attendance, and that on December 8, the day before the study, there was a near-record usage (234). The combined data however permit a reasonable appraisal of the operation of the installation.

Unit Movement Times:

These were timed on three days. It was found, however, during the final day that the hydraulic system was leaking badly and this was repaired, resulting in appreciably faster times, and the following times represent the performance on that day.

(a) Dolly movement, full cycle for extension from elevator into stall, lifting a car and returning to elevator, or vice versa: Average time 15:06 seconds.

(b) Elevator travel upward, from ground level up to each of the five upper levels, including setting into position at destination level:

1 level, average	7.8	seconds
2	14.4	"
3	21.6	"
4	27.6	"
5	31.5	"

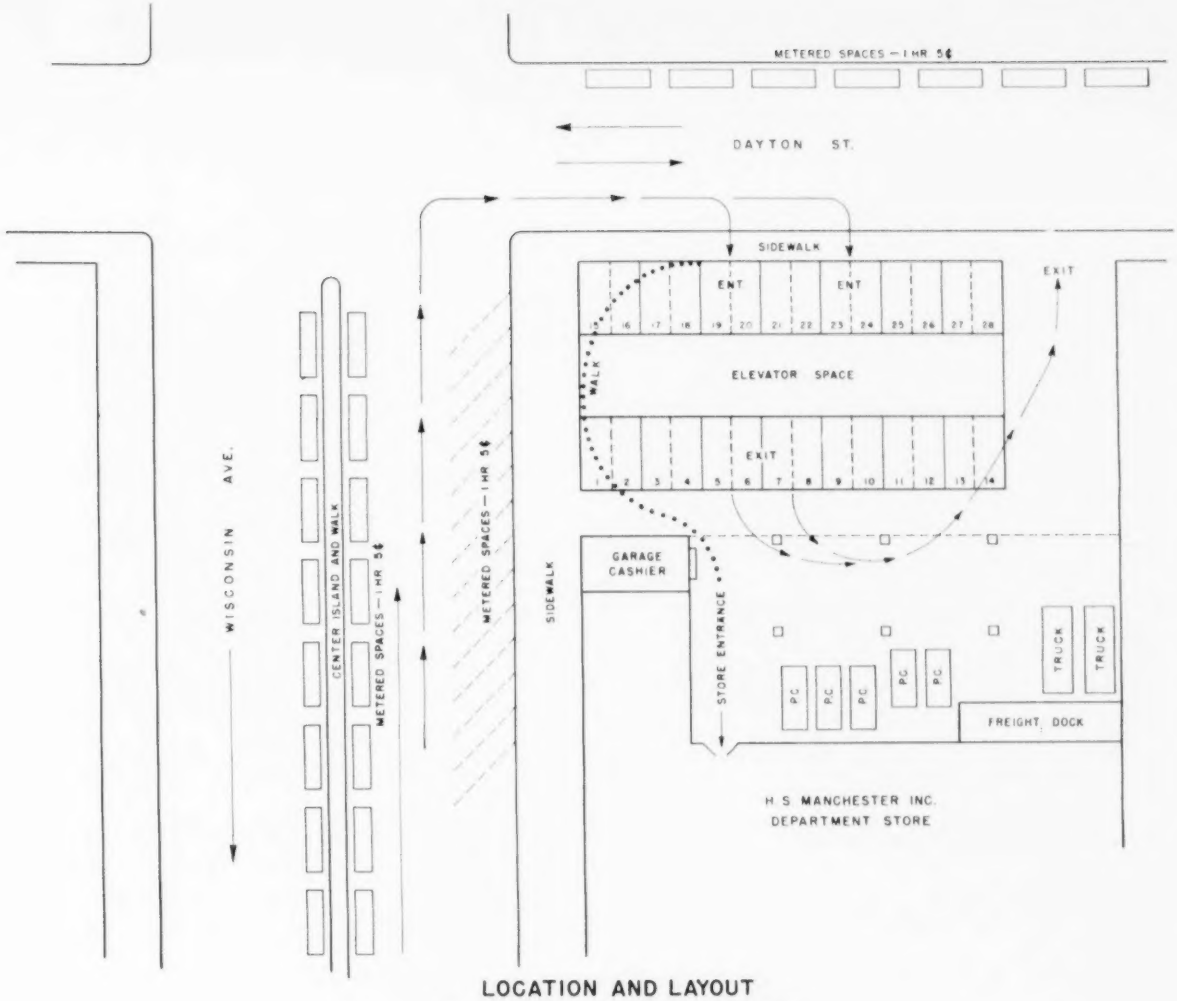
(c) Elevator travel downward, from each level to the ground level, including "unsettling" at start:

1 level, average	5.8	seconds
2	10.6	"
3	14.7	"
4	18.4	"
5	20.5	"

(d) Elevator travel horizontally. Since the entrance lane occupies two parking stalls, the travel to any designated stall was measured in terms of half stalls:

1½ stalls, average	7.5	seconds
2½	9.4	"
3½	11.2	"
4½	12.9	"
5½	14.5	"
6½	16.4	"
7½	18.2	"
8½	19.8	"

Since the horizontal and vertical movements usually occur simultaneously and since the vertical movement is slower, the time for horizontal movement is of importance only for a few stalls. The elevator times are shown graphically in Figure 6. By combining these unit times the following trip times result:



LOCATION AND LAYOUT
PIGEON HOLE GARAGE, MADISON, WIS.

Figure 4

Nearby stall, up 1 deck		
Dolly out and in	15.06	secs.
Travel up	7.8	"
Dolly out and in	15.06	"
Travel down	5.8	"
Min. single trip	43.72	secs.

Remote stall, 5th deck		
	15.06	secs.
	31.5	"
	15.06	"
	20.5	"
Max. single	82.12	secs.

Single trip to av. stall		
Dolly	15.06	secs.
Up 2.7 decks	19.8	"
Dolly	15.06	"
Down 2.7 decks	13.6	"
Av. single trip	63.52	secs.

Dual trip, Av. stalls		
Dolly out and in	15.06	secs.
Up 2 decks	14.4	"
Dolly (to stow)	15.06	"
Up to 4th deck	14.4	"
Dolly (to remove)	15.06	"
Down to ground	18.4	"
Dolly (to deliver)	15.06	"
Return to start	8.4	"
Av. dual trip	115.8	secs.

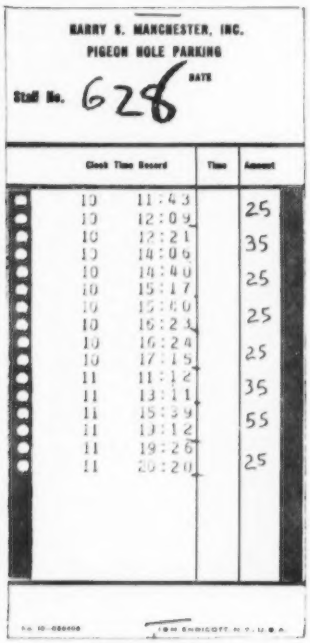
Parking Volumes:

The arrival pattern and the accumulation of parkers are indicated by the curves in Figure 7. The curve for Monday December 8 represents an expansion of the data for a similar day, Thursday, December 11, to the known volume reached on December 8. This garage is very preponderantly used by shoppers, and the curves are representative of the driver-shopper pattern.

These volumes reflect the Christmas shopping rush. This garage opened in December 1951, and the usage up to December 1, 1952, averaged 110 per day, including 12 employees paying $5 per month, the garage capacity being 146. It is estimated that a daily average of about 180 parkers would be needed at the current fee rate, to make the garage self-supporting, but it is definitely an attraction to shoppers, and its usage is gaining.

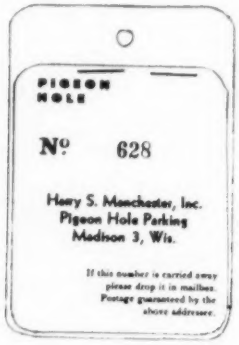
The total volumes handled were:

Monday	December 8	12:00-9:00		234	plus about 12 employees
Tuesday	December 9	9:30-5:30		180	" " " "
Wednesday	December 10	9:30-5:30		154	" " " "
Thursday	December 11	12:00-9:00	(snow)	141	" " " "



Garage Record

This ticket bears the record of the use of one parking space for several days. Each pair of lines records one parking.


PIGEON HOLE
No 628
Henry S. Manchester, Inc.
Pigeon Hole Parking
Madison 3, Wis.
If this number is carried away please drop it in mailbox. Postage guaranteed by the above addressee.

Customer's Ticket
A plastic-encased permanent ticket re-used indefinitely.

Figure 5

Car Handling Operations as timed on Wednesday, December 10.

Arriving Parkers Delay in Street [1]		Departing Parkers Delivery Time [2]	
Mins. Delay	No. Parkers	Mins.	No. Parkers
0	63	0	0
1	28	1	32
2	14	2	42
3	12	3	33
4	7	4	20
5	7	5	8
6	9	6	4
7	3	7	8
8	5	8	2
9	1	9	3
10	2	10	1
11	3	11	1
	154		154

Max. delay 11 min., average 2.15 min. Max. time 11 min., average 3.1 min. The maximum number of cars waiting in line in the street was 6 and the average was 2.

[1] Arrival in street to arrival in reservoir.

[2] Arrival at cashier's window (or in line) to delivery of car. Comment is made in a later paragraph concerning the greater delays occuring with a heavier parking load.

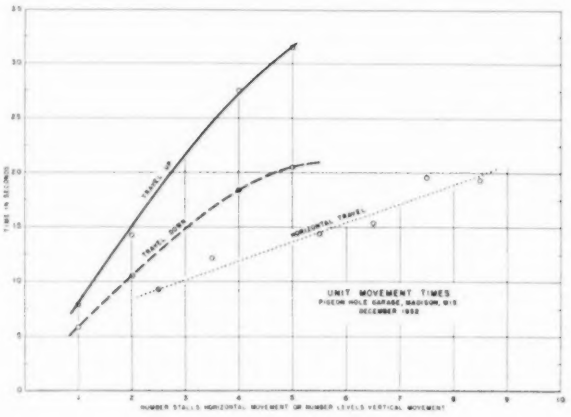


Figure 6

It should be noted that on Thursday, December 11, due in part to the repairs made in the hydraulic system, the average handling time for outgoing parkers was reduced from 3.1 minutes to 2.4 minutes.

Purpose of Parkers	No.	Percent
Shopping	124	96.2
Business	3	2.3
Work	0	—
Social, Rec.	0	—
Other	2	1.5
	129	100.0
Unknown	25	
	154	

Sex of Parkers	No.	Percent
Female	95	73.6
Male	34	26.4
	129	100.0

Since this garage is adjacent to and operated by the city's largest department store, the overwhelming preponderance of shoppers is not surprising, and the preponderance of woman drivers is a natural consequence.

Parking Durations	No.	Percent	
Less than 30 min.	5	3.3	
30 - 60 min.	11	7.3	Average duration 2.8 hrs.
1 - 2 hrs.	42	27.8	
2 - 3 "	28	18.5	
3 - 4 "	29	19.2	
4 - 5 "	16	10.6	
5 - 6 "	19	12.6	
6 - 7 "	1	0.7	
	151	100.0	
Unknown	3		
	154		

Since these observations were made during the Christmas shopping season, it is probable that the average duration was somewhat longer than might be the case at other seasons.

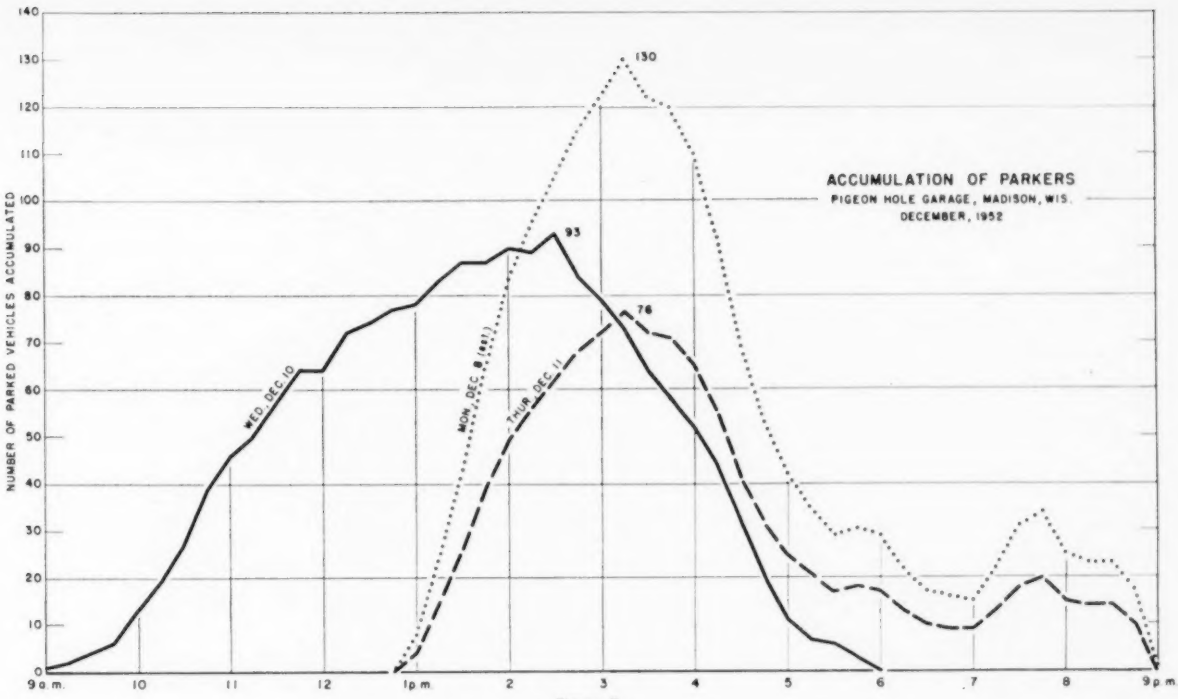


Figure 7

On Thursday December 11, the average duration was 1.9 hours as against 2.8 hours on Wednesday. No doubt the appearance of a heavy snow storm on Thursday afternoon was a contributing factor, although it is quite possible that the average duration will run less on an evening-shopping day.

Destinations of Parkers:

Parkers were questioned as to their primary destination after parking and these destinations are shown in Figure 8. The Manchester store, immediately adjacent, was the destination of 90 percent.

Parkers' Opinions:

Parkers were asked whether they liked the Pigeon Hole Garage, and to give a reason.

Reasons for liking the garage		Reasons for disliking	
Location	45	Fee	1
Time	36		
Convenience	23		
No Worry	16		
Always has space	7		
Security	6		
Fee	2		
Cars not handled	1		
Clean	1		
	137		

It is of interest that no comment was made on the delays encountered by some parkers.

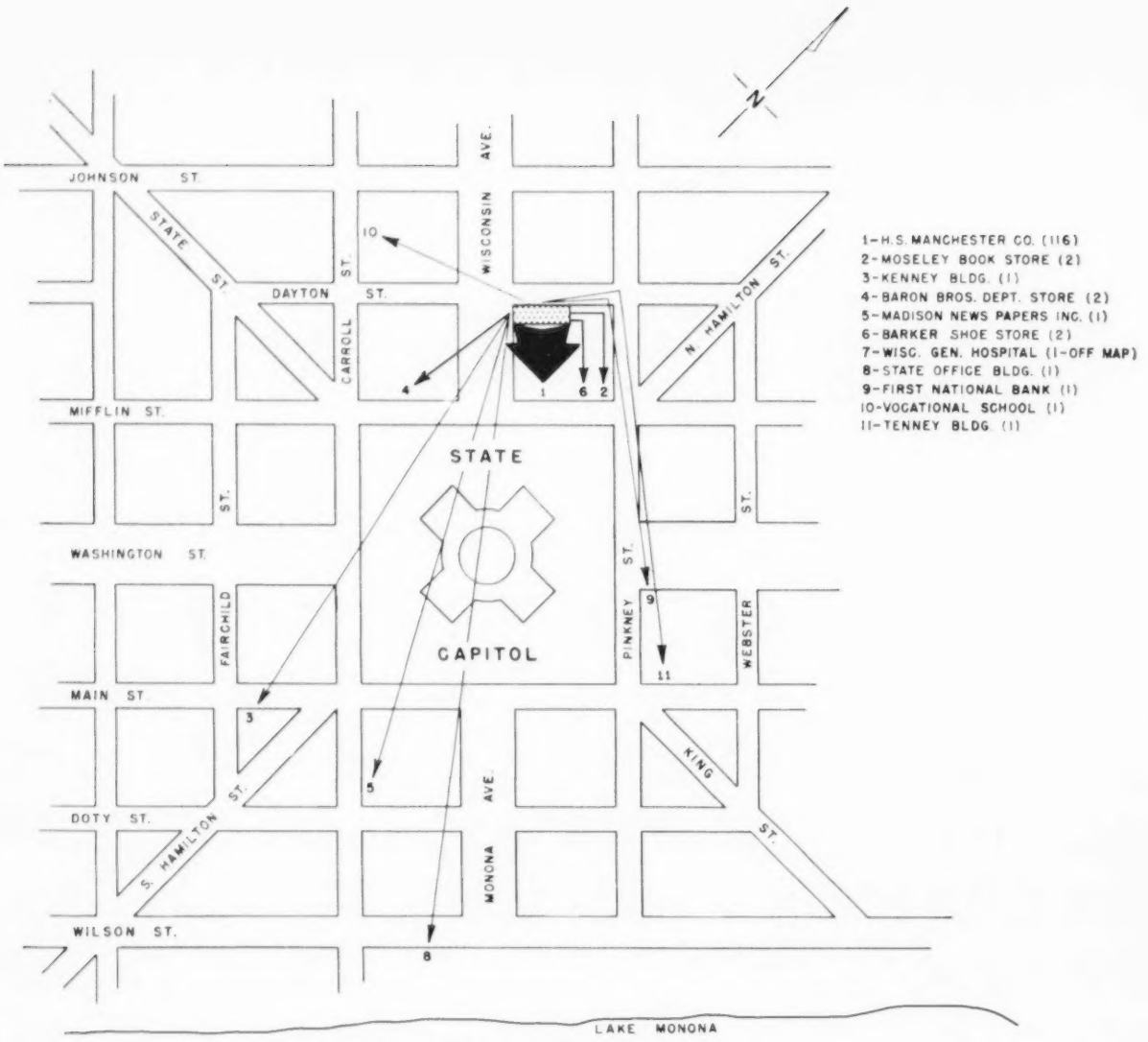
Expansion of Data:

The timing of car-handling operations was conducted on December 11 when, unfortunately, a heavy snowstorm appeared early in the afternoon, held down the patronage, and so prevented observation of the performance under pressure. It was known, however, that on December 8th the usage had been heavy (234 parkers), and since detailed data for a similar (evening-parking) day were available, it was possible to expand the data for December 11 to the level reached on December 8, and thus to approximate an arrival pattern for December 8, as presented in Figure 7.

The expanded data for the heavy-volume day having 234 parkers show that during the peak hour of activity there were 61 cars arriving to park and 22 cars to unpark. Applying the best unit-movement times observed, and assuming that conditions permitted efficient operation, there might have been 22 "dual" trips and 39 single trips. Assuming average positions for the stalls used, approximately 84 minutes would be required to handle these trips, indicating an overrun or delay of 24 minutes for that hour. It so happened that although no study was made on this day, December 8, the operation was observed for a short while close to the peak, and it was found that some cars were waiting in line in the street for at least 22 minutes, confirming the delay as estimated. It also should be noted that on December 8 the high usage continued for four successive hours at very nearly the same rate, possibly leading to even longer delays. As pointed out, however, the garage patrons, when questioned, made no complaint of delays. No observation was made of the retrieving operation on the day of heavy usage, but since the maximum retrieving time was 11 minutes with a usage of 154, it is probable that it was much higher with a usage of 234.

Safety Measures:

In this type of garage it is desirable and customary to provide gates at the elevator-aisle and of each stall on the ground level, and to fence off all pedestrian access to the aisle. There is very little clearance between the traveling



DESTINATIONS OF 129 PARKERS
H. S. MANCHESTER CO. PIGEON HOLE GARAGE
MADISON, WISCONSIN
DEC. 10, 1952

Figure 8

elevator and the columns beside the elevator-aisle, and the elevator-operator, riding the platform, is unable to see a person who might enter the aisle. At a garage serving shoppers, where children are apt to be present, it is important that the gates, particularly those at the entrance and exit stalls, be used fully. It is understood that in the revised design of this structure the elevator clearance has been increased considerably.

Summary and Discussion:

Analysis of the unit movement times indicates that at this garage it should take about 64 seconds to place or to retrieve the average car (on a "single" trip) and that it should take about 116 seconds for the average "dual" trip, placing one car and retrieving another. Slightly longer times are required in actual practice, as demonstrated by the average handling time of 2.4 minutes (144 seconds) observed on December 11, this being the average of a mixture of single and dual trips. These times are representative of the Madison structure, one of the earlier Pigeon Hole installations, and may not be representative of the more recent structure.

When compared to a ramp garage, an average delivery time (dual trip) of 2.4 minutes is, of course, excellent. But in considering any type of garage it must be borne in mind that the criterion must be not individual delivery times but the rate per hour, and that in a mechanical garage the handling operations cannot overlap each other, as they can in a ramp garage. Thus, if in a mechanical garage the average delivery trip (usually including some dual trips) requires

(Continued on page 417)

Pedestrian "Scramble" Control

By Robert D. Dier (Mem. ITE)
Traffic Engineer, City Hall, Long Beach, California

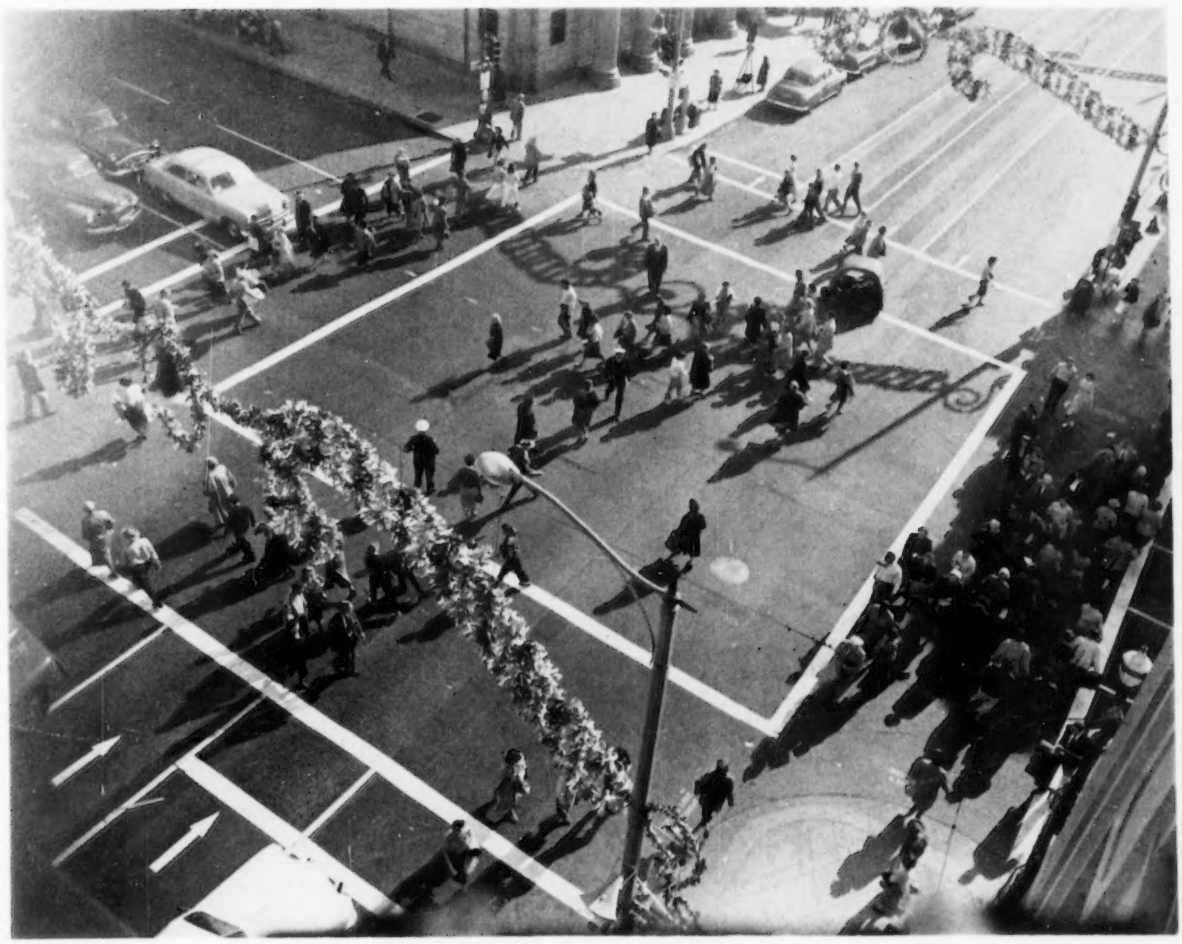


Figure 1
Pedestrians "scramble" at Long Beach's Pine Avenue and Fourth Street last Christmas

IT IS HOPED that the following information, resulting from this city's experience with "scramble" control, will aid others in judging for themselves the relative merits of the theory and application of pedestrian phasing.

When consideration was first given to three-phase "scramble" type traffic control signals for the central business district of Long Beach, the following warrants were used to guide the necessary advance planning.

1. Extremely heavy vehicular volumes complicated by a steady flow of pedestrian traffic in such numbers that turning movements at intersections are limited to amber intervals.
2. Absence of excessive through traffic volumes.
3. Low average speeds.
4. Intersecting streets of relatively narrow widths (approximately 50 feet or less curb to curb).
5. Sufficient sidewalk width to permit storage of large numbers of pedestrians.
6. Modern street lighting meeting I. E. S. standards for illumination at each intersection under consideration.

Furthermore, it was believed that one-way traffic would be most desirable where "scramble" type control was employed. The combination of long signal cycles, extremely short green intervals resulting from three-phase operation

and signals spaced regularly one block apart does not lend itself to good progression in two directions.

In mid-November, 1953, Pine Avenue and neighboring Locust Avenue were designated one-way throughout downtown Long Beach. Then on December 7, 1953, "scramble" control was established at four successive intersections along Pine Avenue, the most important street for shopping in this city.

This three-phase pedestrian control operates under the following conditions:

1. Fifty-foot intersecting streets.
2. Fifteen-foot sidewalks.
3. Parking permitted on both sides of each street.
4. One of the intersecting streets carries four lanes of traffic in one direction only.
5. Fixed time, non-interconnected traffic signals.
6. Sixty-second signal cycle.

a. Phase 1, 17-second green followed by 2-second amber on the two-way street.

b. Phase 2, 9-second "Walk" indication followed by a 12-second clearance interval ("Don't Walk" indication is on throughout the entire cycle except during this 9-second period).

c. Phase 3, 18-second green followed by 2-second ambe ron the two-way street.

7. Four special pedestrian signals at each intersection. Each signal, constructed with two faces at right angles to one another, is banded to a modern street light pole. Each face displays a "Don't Walk" legend in red neon. The word "Walk" is illuminated at all times. The word "Don't" is only turned off during the first 9 seconds of the pedestrian phase. As a precautionary measure the circuit is so designed that failure of the "Don't" neon tube will cause the "Walk" indication to become inoperative also.

8. Traffic signals are louvered in such a manner that they cannot be observed by pedestrians.

9. Four special pedestrian signs at each intersection. These signs display the legend "Diagonal Crossing Permited On Walk Signal".

"Scramble" control was introduced with a minimum of confusion and appeared to accommodate the pre-holiday traffic efficiently. Complaints, both oral and written, regarding this type of signal have been surprisingly few.

The intersection of Pine Avenue with Broadway now carries 21,000 vehicles in all directions during an average day. The average hourly volume passing through this intersection between the hours of 7:00 A.M. and 6:00 P.M. is 1,264 vehicles per hour. Average morning and evening rush hour periods account for 975 and 1,475 vehicles respectively at this same location. Forty to forty-five per cent of all traffic flows along the one-way street. During one busy hour on Wednesday, December 23, 7,600 pedestrians and 1,160 vehicles passed through the intersection of Pine Avenue and Fourth Street. It has been estimated that, with a balanced flow of pedestrians in all directions, this intersection could have handled 9,600 pedestrians per hour.

"Scramble" control has substantially reduced the intense congestion which had been previously experienced at these intersections. In the past, with conventional signals, left and right turns at a single approach to an intersection were limited to about one each per cycle and these occurred on the amber light. It is now common to observe from three to five vehicles successfully completing turns during a single cycle in any left or right turn lane of the intersection. These turns are executed from a one-way street with no delay to through traffic and from a two-way street with only minor delay to through traffic.

It has been possible to establish good signal progression on Pine Avenue, a one-way street, but not on the two-way cross streets. Additional one-way streets would bring some measure of relief to this situation.

Pedestrian overcrowding has occasionally been observed within the painted crosswalks which were left intact when the new signal control was introduced. Even though pedestrians now have complete freedom of movement within an intersection, they confine themselves, except for diagonal crossings, to marked lanes. Consequently, it is felt by this office that the removal of the four inner crosswalk lines at intersections using "scramble" control would be most advantageous.

It is noteworthy that there have been no complaints from pedestrians regarding the longer waiting period resulting from three-phase control. The 9-second "Walk" indication was the subject of much of the early and most frequent criticism. However, pedestrians soon realized that a 12-second clearing period existed after the expiration of the brief period during which the "Walk" signal was displayed alone.

During the first day of three-phase operation it was found that undue confusion existed when the pedestrian phase followed the "go" period on the two-way street. Frequently a driver attempting a left turn and having been delayed by oncoming through traffic found himself surrounded by pedestrians before he could clear the intersection. This problem was solved by rearranging the phase sequence and thus permitting pedestrian movement to follow the green interval on the one-way street. From this it is quite obvious that one-way traffic on at least one of the two intersecting streets will contribute much to a successful "scramble" operation.

Police officers were stationed at each intersection for the purpose of pedestrian education to "scramble" operation. Regular blowing of police whistles appeared to add to, rather than relieve, the initial confusion of the foot traffic. It is the opinion of this office that mobile loud-speakers at each intersection would have been much more effective in helping people to become accustomed to the new system.

"Scramble" type control has been favorably received in Long Beach. It is now anticipated that additional three-phase signals of this type will be provided at many other intersections in the central business district.

BE SURE TO ATTEND—

The 25th Annual Meeting

at Kansas City, Missouri

September 27 - 30

Reversible Sign Technique

By John W. Zimmerman, (Assoc. Mem. ITE)
Assistant Traffic Engineer, Chicago Park District, Chicago, Illinois

NORMAL PERIOD: During this period all traffic keeps to the right of the medial fin.

FROM ALL KNOWN RECORDS Lake Shore Drive is the most heavily travelled traffic artery in the world. At points of greatest concentration more than 12,000 cars pass in one hour during the rush periods; twenty-four hour volumes exceed 140,000 vehicles. The yearly total automobile travel on this 15-mile stretch of roadway approaches one-half billion vehicle miles. In order to accommodate such dense volumes of traffic, many special channelizations are needed.

One particular channelization on North Lake Shore Drive is the use of an off-center, reversible lane operation. This operation uses the eight existing lanes in combinations of four lanes in either direction during normal periods, and six lanes in the major and two lanes in the minor directions during rush hour movements. The major and minor directions are reversed for the morning and evening rush hours.

This transition of traffic lanes is accomplished partially by the manual placement of traffic cones and barricades and partially by hydraulic traffic dividers.

The hydraulic traffic dividers consist of three parallel lines of fins running longitudinally in the roadway and arranged so that, by raising and lowering the lines of fins, this roadway can be arranged in several combinations of traffic lanes, providing two, four or six lanes in either direction. These fins are controlled by the operation of switches in control boxes which are located at the two extremities of the system.

The transition point between the hydraulic fin dividers

P.M. RUSH PERIOD: Four lanes to the right and two express lanes to the left of the medial fin. Back of sign reading "KEEP TO RIGHT" faces southbound traffic.

and the more conventional manual placement of barricades and cones as traffic dividers occurs at the Belmont Avenue grade separation. Here a 12 foot landscaped medial island separator is incorporated in the traffic channelization. This medial island separates the lanes used during the rush hours from the normal channelizations. Traffic using these two provisional lanes is isolated from all exit facilities for a distance of three miles. During rush period operations it is imperative that a sign convey this message to the motorists.

The sign at this point must meet the criteria that are, in general, imposed on all signs on this roadway. The signs must not only be large enough to be easily observed by the high-speed traffic (45 MPH), and carefully placed so as to convey the proper message with allowance of enough roadway distance to negotiate the response to the message in dense traffic, but also must be adoptable for the various changes in regulations during a normal operating day.

To meet the above requirements a large moveable panel sign capable of displaying a combination of messages for the various periods of the day was designed and constructed in the Park District shops. The legend areas are 3′-6″x8′ panels, using 12″ letters in the standard CD & E alphabets. The color combination is silver reflectorized letters on a green reflectorized background. The vertical clearance between the sign frame and roadway is 14′-6″.

The panels are held in the desired positions by a 4′x17′-6″, 3″ tubular welded frame which is attached to an 8″ standard pipe column support. A panel locking device on the sign frame has the control near the base of the sign. The all-welded base housing, enclosing a set of reduction gears, is secured to the concrete foundation with anchor bolts. The complete sign structure, exclusive of the concrete foundation, weighs about 1,500 lbs.

Thru a series of bevel and spur reduction gears the pressure necessary to rotate the panel 180° to the open position is reduced by a 64 to 1 ratio. Assuming a 25 MPH resistance on the panel it would take approximately 8 lbs. of pressure exerted on a 10″ crank, to move the panel. The sign is designed to withstand a 15 lb. per sq. ft. wind load, which is equivalent to a 60 MPH wind velocity.

This sign was designed to meet all the requirements imposed by high speed, high density traffic. The large movable legends will provide sufficient sight and transition distance, and at the same time have the message flexibility necessitated by the various regulation changes.

HIGHWAY & TRAFFIC PROBLEMS IN UNINCORPORATED AREAS OF LOS ANGELES COUNTY

(Continued from page 405)

placing and maintaining these signs, markings, and devices is about one and one-half million dollars.

I would like to be able to present concrete evidence that these traffic control measures are paying big dividends in the field of accident prevention alone. Frankly, I do not have such evidence at this time. In the near future, however, we hope to recruit sufficient personnel to adequately analyze our traffic accident records in order to aid in determining future policies and programs.

In closing, I would like to emphasize one point. The Road Department recognizes the tremendous importance of accepting the challenge of providing more and better highways. But in so doing, we also recognize that it is of equal importance to devote the meager available funds to those locations where the greatest factual need has been established. With this thought in mind the Department is relying more and more on careful, long range planning to build a firm foundation for an efficient street and highway program.

A STUDY OF THE PIGEON HOLE MECHANICAL GARAGE AT MADISON, WIS.

(Continued from page 412)

2.4 minutes, then the delivery rate cannot exceed 25 per hour. Hence, if the patrons appear at a greater rate, there will be delays.

If attention were concentrated, for example, on the delivery of cars, then deliveries (at the Madison garage) could be made up to 56 per hour, and this would apply equally to acceptances. At the Madison garage it is definitely the policy, during the departing rush period, to give priority to departing parkers. This is more or less standard operating procedure at commercial garages, since it appears that parkers resent delays in delivery much more than delays in getting into a garage. Or, with an even balance of acceptances and deliveries and every trip a dual trip, the maximum handling rate would be 31 cars accepted and 31 delivered in an hour, neither figure large enough to meet the peak demand at the Madison location.

A heavy arrival rate may often be compensated for by the provision of adequate reservoir space, which will largely eliminate delay to the incoming parkers, and such reservoirs have been provided at several other Pigeon Hole installations. But a reservoir is of little value in taking care of heavy departure rate, which is almost certain to exist in a garage catering to shoppers, and in any case the available area at the Madison installation permits little reservoir space other than that in the adjacent street. It is probable that the mechanical performance of the Pigeon Hole equipment can be speeded up somewhat, but it appears that for an installation where prompt delivery is important, the design should not require one elevator to serve more than 100 stalls, and that is understood to be approximately the current policy of the manufacturer.

It is not within the province of this report to attempt an analysis of the mechanics of the Pigeon Hole device, but some comments may be appropriate.

(Continued on page 422)

TRY THESE NEW "EZ-ON"® SIGN FACES at LOW COST!
NOW IN RED
STOP
NEW IDEA IN TRAFFIC STOPPERS ... at NEW LOW PRICES!
They slip over your present signs restoring their "newness," hence your present signs are never out of service. Now in Red... the new idea in Stop signs and reflectorized, of course ... for effective night and day service, (also in standard traffic yellow). Attach in less than 5 minutes... and the cost?... less than half that of ordinary traffic signs!
GRACE "EZ-ON"® FACES
... are the 'hottest' item in the sign industry today. In wide use by several Highway Departments for over 3 years.
STOP
STANDARD COPY OR YOUR OWN
They're made of 30 ga. steel and are furnished in two shapes... octagon and diamond... and in 2 sizes... 24 in. and 30 in. May be applied in less than 5 minutes, and without taking present sign out of service. Any copy you may desire... standard and regulatory, or your own special copy if you prefer. Now in wide use in New York, Nevada, Texas, Minnesota, Kentucky, Ohio, Missouri, Iowa and other states and cities. INVESTIGATE.. and save. Their cost is HALF that of ordinary signs!
"EZ-ON"® FACES
being applied at 6th and Washington in Paducah, Ky.
1. You slip 'EZ-ON' Faces over old sign. Note Wide Flanges.
2. Then bend flange backward holding 'EZ-ON' Face in place.
3. Use special Crimping Tool to clamp flange and secure sign.
AGENTS WANTED
WRITE FOR FULL INFORMATION
THEY'RE REFLECTORIZED
GRACE SIGN & MFG. CO.
3601 S. SECOND ST. • ST. LOUIS 18, MO.

Mid-Year Round of Toll Road Trends

By the Editorial Staff

New developments in the field of toll highway financing and construction, as reported from state capitals throughout the country during the month of July, include the following:

CONNECTICUT: Five Connecticut engineering firms were awarded contracts for work on the state's $398,000,000 toll expressway, which will run 129 miles from the New York State line at Greenwich to the Rhode Island line at Killingly.

State Highway Commissioner G. Albert Hill announced the firms given the new engineering contracts were: Westcott and Mapes, New Haven; Newman E. Argraves and Associates, New Haven; John J. Mozzochi, Glastonbury; F. P. Molloy, West Hartford, and Loomis and Sullivan, Hartford.

They will share the work on 24 sections of the expressway with engineering firms from six other states. The entire project, Hill explained, was divided into 30 units, four of which were assigned to state highway engineers.

All survey and design work must be completed within nine months, Hill said, to provide final plans by the end of April, 1955. Thereafter the state expects to begin the advertising and award of construction contracts.

FLORIDA: Court action to validate an $89,000,000 revenue bond issue to finance the projected 110-mile Southeast Florida turnpike was started despite objections by LeRoy Collins, Democratic gubernatorial nominee, that plans for the so-called "bobtailed" toll superhighway, from Miami to Fort Pierce, "are not logical and sound."

Collins, who will become governor in January, contends the pike could be built for less and has been asembling data intended to support that argument. He favors a state-long turnpike and believes plans for such a facility would be jeopardized unless the Miami - Fort Pierce link is constructed at the lowest possible cost.

Chairman Marvin Adams of the Florida Turnpike Authority asserted his agency would abide by the estimates of its engineers unless they are proven wrong.

Meanwhile, Acting Governor Johns rejected a request for a special state legislative session to consider the turnpike issue. The request came from Ted David, who will be speaker of the 1955 Florida House of Representatives.

INDIANA: State Toll Road Commission has set Sept. 1 as the groundbreaking date for construction of the 156-mile, east - west turnpike across northern Indiana.

After receiving a report from its engineering consultants that the first construction bids likely would be sought by Aug. 2, the commission also set Aug. 25 as the date for the bid opening. It was indicated construction would start on two sections, totaling 7.3 miles, just west of South Bend.

A $280,000,000 revenue bond issue previously was sold to finance the east-west turnpike, which is scheduled for completion in late 1956. The route will run from the Indiana-Illinois line east of Chicago to a connection with the toll superhighway now being constructed across northern Ohio.

Besides setting the date for the initial groundbreaking, the commission also awarded two firms contracts to design turnpike structures under a system which Commission Chairman Dillon Geiger of Bloomington said would prevent fee-gouging.

The firm of Charles W. Cole & Son of South Bend was given a contract to design 10 service areas along the turnpike including restaurant and filling station buildings. Construction costs are expected to total $6,500,000, with the Cole firm to receive 4½ per cent of the cost as a fee.

James-Williamson & Associates of Indianapolis was awarded a contract to plan interchange utility buildings, toll booths and interchange lighting. These projects are expected to cost $3,550,000. The firm, headed by Edward D. James and Clyde D. Williams, will receive 5 per cent of the cost as a fee.

Dr. Geiger explained the fees were decided upon in conformity with schedules set up by the American Society of Engineers and the American Society of Architects, and that the commission's stand backed up Governor Craig's demand that there be no profiteering on toll road projects.

KANSAS: The projected $140,000,000 Kansas toll superhighway received clear-cut approval from the State Supreme Court in a unanimous 27-page formal opinion upholding the constitutionality of the state's 1953 turnpike enabling act.

The formal opinion followed an earlier brief memorandum opinion, which held the law to be valid but stated two of the justices desired to write their own opinions. There was no dissent, however, to the court's formal opinion, written by Justice Walter G. Thiele.

"We know of no constitutional impediment," the court said. "The question is one within the discretion of the legislature."

Validity of the broad powers given the State Turnpike Authority had been challenged in a quo warranto action brought by State Attorney General Harold R. Fatzer to test the constitutionality of the law and assure proper legal procedure. Ten specific questions of law had been raised in the friendly test action.

The high state court ruled the creation of the authority was legal and that its proposed method of operation was within constitutional provisions. The court pointed out that the legislature could not have known the exact route or cost to fix them through legislative action, and that it had the power to authorize the engineering surveys which showed the toll road to be feasible.

"We think," the court said, "it is clear the legislature has the power to create an arm of the state other than the state highway commission to construct a particular type of highway."

The opinion further pointed out that the law was clear that the state is in no way financially liable for any of the costs and that the road is to be entirely self- liquidating through tolls.

The Kansas Turnpike Authority hopes to offer bonds for sale early in October, with actual construction of the turnpike to get under way before the end of the year. The turnpike will angle southwestward for 234 miles from Kansas City, Kan., to the Oklahoma line, touching Lawrence, Topeka, Emporia, El Dorado, Wichita and Wellington. Completion is scheduled for early 1957.

MASSACHUSETTS: Construction work on the $239,000,000 east-west Massachusetts toll highway will be let in relatively small contracts to speed completion by the end of 1956, according to announcement by Benjamin H. Grout of Springfield, a member of the State Turnpike Auhtority.

Revealing that the authority hopes to let the contracts at an average of about $5,000,000 each, he explained that at an average cost of $1,000,000 a mile, the average contractor will be doing about five miles.

MISSOURI: A bill to empower the State Highway Commission to construct toll roads and issue revenue bonds to finance them will be introduced in the 1955 Missouri legislature by Senator William M. Quinn of Maywood.

The 1953 Missouri legislature rejected a bill proposing the creation of a special turnpike authority. Opposition to the new proposal will be led by a group organized as the Public Roads Association of Missouri, with headquarters in Jefferson City.

NEW HAMPSHIRE: State Public Works Commissioner Frank D. Merrill predicted work will be started in Concord this fall on the $19,500,000 Central New Hamphire Turnpike, which will extend from Concord to the Massachusetts line.

He said it will take about two years to build with the road ready for traffic by 1957. There will be no tolls on the portions through Nashua, Manchester and Concord.

NEW JERSEY: Net revenue on the 118 mile New Jersey Turnpike for the 12 months ended June 30 was $18,999,915, an increase of $2,348,162 over the net for the same period in 1952-53, according to announcement by the New Jersey Turnpike Authority.

The turnpike's toll revenue for the 12 months was $20,004,279 and revenue from concessions, investments and miscellaneous sources was $2,441,050, for total revenue of $22,445,329. Comparable figures for the previous 12-month period were $17,770,416; $1,892,776, and $19,663,192.

In a report to bondholders, the authority listed operating expenses for the period as $3,448,036, compared to $3,012,432 for the previous 12-month period.

A total of 23,394,254 toll vehicles used the pike from July 1, 1953, through June 30, 1954, a gain of 3,510,182 over the similar period in 1952-53.

NORTH CAROLINA: A proposed survey to help the North Carolina Turnpike Authority determine the feasibility of participating in plans for a toll turnpike running from Charlotte up to Ohio was given tentative approval by the North Carolina State Highway Commission.

Chairman Orton Boren of the North Carolina Turnpike Authority told the commission that his group and similar agencies in Virginia and West Virginia hoped to make an origin-destination traffic study in preparation for the construction of a tri-state toll highway.

The North Carolina link would start in the Charlotte-Gastonia area and run past Winston-Salem out of the state at a point near Mt. Airy. The Virginia authority then would build a section across the western tip of its state to connect with an extension of the West Virginia Turnpike.

Boren said he went to the highway commission because it held the purse strings. He explained the proposed survey would cost upwards of $100,000, which would go to an engineering firm for compiling and analyzing data.

The actual data, however, would be collected by highway commissions of the three participating states. Boren said the cost in North Carolina would be about $26,000, provided the commission supplied the necessary traffic counting teams and field stations.

At Boren's request, the commission voted to recommend to the governor and Council of State that North Carolina's participation in the survey be authorized up to the extent of $25,000. The legislature provided that highway funds to that amount might be used for toll road studies, with the money to be repaid out of any revenue bonds the turnpike agency might subsequently issue.

Meanwhile, North Carolina Highway Commission Chairman A. H. Graham expressed belief that a small-scale projected toll road between Virginia Beach and Nags Head can be completed next summer, with opening to traffic later that year.

An ex-officio member of North Carolina's Carolina-Virginia Turnpike Authority, Graham made his prediction after attending a meeting of that body with the Virginia Coastal Turnpike Authority, Graham made his prediction after attending a meeting of that body with the Virginia Coastal Turnpike Authority at Virginia Beach, Va.

The two special toll road agencies signed agreements providing for sale of about $3,000,000 in revenue bonds to finance the 53-mile road and instructed engineering firms to have plans and specifications ready by Aug. 15. Graham said bids on construction contracts would be opened sometime in September.

The Chicago engineering firm of DeLeuw, Cather & Co. is handling the traffic survey and the firm of William F. Freeman, Inc., engineers and architects of High Point, N. C., will supervise construction.

Handling the bond sale will be a syndicate headed by Strader-Taylor of Lynchburg, Va., and Alex Brown and Co., of Baltimore, Md.

OHIO: The 241-mile northern Ohio toll superhighway is now completely under contract. The last section of the turnpike was placed under construction contract by the Ohio Turnpike Commission when it awarded A. J. Baltes, Inc., of Norwalk, a contract to build a four-mile section in Lorain County.

PENNSYLVANIA: Scheduled opening date for the first half of the Pensylvania Turnpike's Delaware River extension was set back from Aug. 1 to Aug 15.

Turnpike Commissioner David E. Watson, in announcing the change, added that the commission still was "shooting for" an Oct. 1 opening date for the entire 33-mile extension from King of Prussia to Route 13 near the Delaware River.

Construction work had been complicated recently, he explained, by a decision to relocate U. S. Route 309, north of Philadelphia. This caused a change in plans for the proposed turnpike interchange in that area.

When completed, the turnpike's Delaware River extension will bring to 360 the total mileage of toll superhighways in the state, extending from the Ohio border to the Delaware River. A bridge will span the river at Edgely, just above Bristol, to connect the Pennsylvania turnpike system with the New Jersey Turnpike.

VIRGINIA: Engineering firms to study the physical and financial aspects of the proposed 35-mile, $57,000,000 toll highway from Richmond to Petersburg are expected to be selected early in September by the Richmond-Petersburg Turnpike Authority, which was created by the 1954 Virginia legislature.

The Virginia State Highway Department was directed by the authority to

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send out specifications to engineering firms. The authority is expected to retain two engineering firms — one to study the traffic potentials and financial aspects and the other to concern itself with engineering and construction problems.

An early start on the engineering surveys, which will use data gathered in previous studies, is expected to clear the way for land acquisition and a start on actual construction next year.

Meanwhile, Governor Stanley announced his appointments to the Old Dominion Turnpike Authority, which also was created by the 1954 Virginia legislature and empowered to finance, construct and operate a projected $75,000,000 toll superhighway across Southwest Virginia from West Virginia to North Carolina.

The authority subsequently met and elected these temporary officers: Sam D. May of Tazewell, member of the State Highway Commission, chairman; J. W. Stanley, Jr. of Galax, trucking concern operator and a nephew of the governor, vice-chairman, and O. H. Mayberry, Pulaski automobile dealer, secretary.

Other members are: Dewey Coburn of Narrows, a former member of the House of Delegates and a merchant; Warren B. Giersch of Galax, an insurance man; Dr. George B. Kegley of Bland; M. F. Woltz of Salem, recently retired right-of-way engineer for the Highway Department's Salem district; H. Lee Turpin of Wytheville, auto dealer; and E. A. Sale, textile manufacturing official and Martinsville banker.

WEST VIRGINIA: Action on the establishment of opening dates for all ingor part of its 88-mile, $133,000,000 toll highway was deferred by the West Virginia Turnpike Commission until its next meeting, scheduled for Aug. 26.

The commission was told by its general manager, Okey L. Patteson, that the entire length of the turnpike between Charleston and Princeton could be opened to traffic sometime in October. He added, however, that the exact date would depend upon factors "that should be substantially clarified" before the August meeting.

Patteson said the section between Princeton and Beckley would be completed by Sept. 2.

"At least half of the remainder will be complete by the midle of September," he said, "but will be unusable until later because of its location with respect to various interchanges."

The commission adopted a schedule of toll rates and fixed a turnpike speed limit of 60 miles and hour. The toll rates, together with revenue from restaurant and service station facilities, are designed to yield an annual income of $5,750,000. The passenger car toll schedule is based on a charge of 1.9 cents per mile. There will be no discounts or reduced rates to commuters or volume users of any class vehicle.

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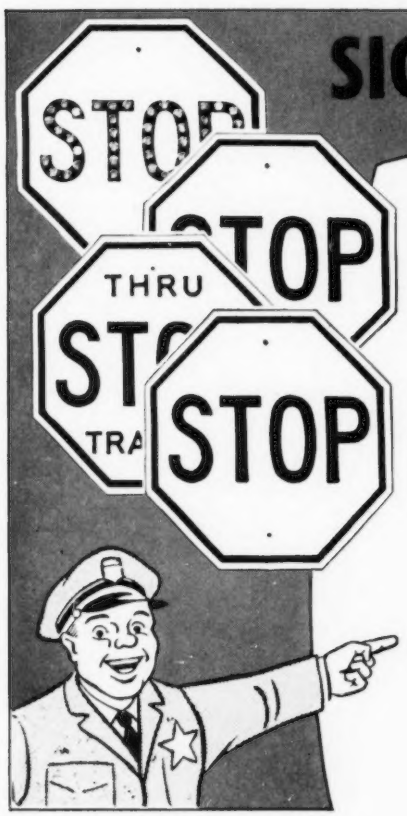

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ADLER, Charles, Jr. (Affiliate)
Consulting Engineer, 1417 North Charles Street, Baltimore 1, Md.

AVINS, Nathan (Member)
Assistant Electrical Engineer, Dept. of Traffic. SEND MAIL: 55 E. Mosholu Parkway No., New York 67, N. Y.

BACCHUS, Grant A. (Junior)
Assistant Traffic Engineer, Ontario Dept. of Highways, Toronto MAfair 6-561, Loc. 38. SEND MAIL: 179 Tavistock Rd., Downsview P. O., Ontario, Canada.

BELLIS, Wesley R. (Member)
Chief, Traffic Design & Research, New Jersey State Highway Dept. SEND MAIL: 248 W. Upper Ferry Rd., Trenton 8, N. J.

BOUMAN, Martin J. (Junior)
Assoc. City Traffic Engineer
Rm. 268 Civic Center. SEND MAIL: 2035 Laurinda Pl. San Diego 5, Calif.

CARMODY, Douglas J. (Junior)
Traffic Engineer, City Hall, 717 Tenth St. Modesto, Calif.

CONNER, Robert E. (Junior)
181-R Howard Dr., Bergenfield, New Jersey.

DARRELL, James E. P. (Member)
Director of Traffic & Planning, Minn. Highway Dept., 1084 University Ave., St. Paul 4, Minn.

DIEHL, Elton G. (Junior)
Traffic Control Engineer Grade II, Bur. of Traffic Engineering. SEND MAIL: 1436 N. 28th St., Milwaukee 8, Wisc.

HALL, Edward M. (Junior)
Traffic Engineer, San Diego County Road Dept. FRanklin 9-9061. SEND MAIL: 4975 Vandevere Ave., San Diego 15, Calif.

HENBERGER, John C. (Associate)
Manager, Western District, A'G'A Div., 3536 Crown Point Dr., San Diego 9, Calif.

KLETT, William G. (Associate)
Traffic Engineer, Minnesota Hwy. Dept., 1084 University Avenue, St. Paul 4, Minn.

LEEK, John R. (Associate)
Bureau of Research & Planning, Ill. Div. of Highways, Springfield. SEND MAIL: 443 W. Eldorado Street, Decatur, Ill.

MACNEE, Walter Q. (Junior)
Traffic Engineer, Ontario Dept. of Highways, Toronto SEND MAIL: 84 Mill Street South Brampton, Ont., Canada.

A STUDY OF THE PIGEON HOLE MECHANICAL GARAGE AT MADISON, WIS.

(Continued from page 417)

(a) The unit type of construction makes it adaptable to areas of various dimensions.

(b) Being prefabricated and having relatively simple footings, installation of a structure should require no more than 60 days.

(c) The manual control involves few electronic devices (perhaps an advantage) hence lower cost.

(d) The structure may be dismantled and moved to another location.

The fact that the controls are manually operated introduces the human element, which can be a considerable factor in the speed and efficiency of operation. The operators should be well-trained and paid accordingly and should include a capable mechanic, since careful maintenance of the hydraulic system is a critical item in the speed of operation.

(f) The basic skeleton-type of structure may conflict with the building code in some locations and may require facing.

(g) The type of structure and of operation probably limit it to a maximum of eight decks.

(h) Consideration must be given to the provision of adequate reservoir space. In some cases, dependent upon the layout of the area, it may be possible to use some or all of the ground-level stalls for this purpose.

(i) It is important, from a safety viewpoint, that the operating area (the central aisle) be carefully screened and gate use required.

(j) It is believed that an appreciable improvement in speed could be gained by the use, at the entrance stalls, of some device to guide entering cars into a "square" position, to eliminate jockeying by the elevator operator. This is not easily done at a location such as that in Madison, where the entrance stall abuts the sidewalk, and entering cars must first make a sharp turn in from the street and then climb the slight slope to sidewalk level, with poor visibility of the floor.

MARTIN, David B. (Associate)
Traffic Engineer, Palmer & Baker, Inc., P. O. Box 346, Mobile, Ala.

MYERS, Hallie L. (Assoc.)
Exec. Dir., Indiana Traffic Safety Foundation, Inc., 302 Insurance Bldg., 8 East Market St., Indianapolis, Ind.

SIMOFF, Abram (Junior)
Traffic Engineer, Traffic Engineering Div., City Hall, East Orange, N. J.

SOSMAN, Edward C. (Junior)
Vice-Pres., General Broadcasting Co. SEND MAIL: 1824 Greystone Rd., Atlanta, Ga.

THOMPSON, Lawrence E. (Junior)
Assistant Traffic Engineer, 112 South 9th St., Phoenix, Arizona.

WALLACE, Robert W. (Junior)
Traffic Engineer, c/o Va. Dept. of Highways, Suffolk. SEND MAIL: 205 Grace St., Suffolk, Va.

WEBB, George M. (Member)
Traffic Engineer, Calif. Dif. of Highways Gilbert 24711, Ext. 2476. SEND MAIL: 5746 State Ave., Sacramento 19, Calif.

WILEY, C. C. (Hon.)
Professor Emeritus, Highway Engrg., Univ. of Illinois, 217 Civil Engineering Hall, Urbana, Ill.

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TRAFFIC NEWS

New Curb Machine Used In North Carolina

A new machine has been developed which will construct a curb without the use of any kind of forms. The machine has been designed to use hot, plant-mixed asphalt but soil cement has been used successfully. This machine lays curbs quickly and economically. The curb molded by the machine has a base of 8 inches and a height of 7¼ inches with rounded sides. The formed curb creates a definite barrier and provides suitable curbs for channelizing islands, directing traffic, laying out parking areas and other uses.

A ton of hot, plant-mixed asphalt is required for each 55 lineal feet. Economy is readily seen in that if asphalt is $6 per ton the cost of material would be approximately $60 per mile or about 11c per foot.

The machine travels at the rate of 10 feet per minute when two men are used to feed asphalt into it. One man is required to operate the machine and usually two men required to shovel asphalt from truck traveling beside it. These three, plus truck driver and possibly a utility man for cleaning up, constitute the needed force. This automatic method of placing curbs should prove a real benefit because of its money and labor saving ability.

This machine was invented by Mr. O. K. Stephens of the State Highway Commission and has been used in a considerable amount of work by the North Carolina State Highway Commission in constructing channelizing island and forming other curbs to control right of way and driveway entrances.

CALIFORNIA RECEIVES ITE AWARD
Governor Goodwin J. Knight (left) accepts plaque awarded California for outstanding achievement in Traffic Engineering during 1953 among Group V (largest and most heavily trafficed) states by Institute of Traffic Engineers. ITE Director Joseph E. Havenner (right) made presentation in ceremonies in Governor's office in Sacramento July 21st. A duplicate award in this group went to Michigan.

Radar Apparatus Gives Green Light to Street Most Crowded with Cars

Radar, which has had plenty of practice guiding planes through the air and ships over the seas, has been put to work on another transportation problem—preventing delays for harried motorists caught at traffic-jammed intersections, the *Wall Street Journal* reports.

A New Haven, Conn., firm, Eastern Industries, Inc., (Automatic Signal Division) has already installed a radar set-up to direct cars and trucks at a corner in Norwalk, Conn., and now reports similar equipment will be sold shortly to help stop tie-ups on overworked streets and highways all over the country.

As explained by Eugene D. Stirlen, Eastern Industries president, the radar is used as a detecting device to control red and green traffic lights, sensing how many cars are moving into the intersection from each direction and rotating the lights acordingly. He thinks that in crowded traffic areas, the system's bound not only to cut delays but to improve drivers' tempers considerably.

The new system's apparatus is entirely above ground. The actual control is housed inside a weatherproof cabinet on top of a pole at the intersection.

A beam of microwaves is directed down each of the intersecting streets. Depending on the corner, cars would hit the beam from 100 to 400 feet away, bouncing back some of the microwaves to be picked up by small antennae.

Say a green light is set for A Street and at the moment there's no traffic at the intersection. When a car comes along on B Street, the antennae takes notice of it and sends the information to the set-up's electronic brain. That in turn switches the light to green on B Stret and lets the car go through.

Later on, perhaps, another car comes along B Stret, but a whole batch of autos are aproaching at the same time on A Street. The system senses the A Street cars are arriving at close intervals, so its lets them through, holding up the lone B Stret auto. But as soon as there's a good-size gap in the traffic, the contorl changes the light to let the B Street driver scuttle through. A special protection control makes sure he doesn't have to wait too long.

Court Upholds City's Parking Program

Milwaukee, Wisconsin: Powers of the city of Milwaukee to proceed with an off-street parking program were upheld by Circuit Court Judge William F. Shaughnessy.

His opinion was handed down in a suit brought against the city by George O. Toepfer, a Milwaukee plumbing contractor, who challenged the city's right to segregate funds it collects from parking meters and all-night parking permits for the purpose of developing off-street parking facilities.

The suit sought a declaratory judgment determining the city's power to: Establish off-street parking facilities; issue overnight parking permits on certain streets; use revenue from parking meters and night parking permits to acquire or develop off-street parking sites; and to condemn certain lands for use under a state enabling act for use as parking areas.

In upholding the city's right to proceed as it had been in each of those matters, Judge Shaughnessy said the city "may plan and develop a program intended to relieve the critical problem of congestion of automotive traffic upon the streets of the city and to provide for off-street parking of automobiles in areas of concentrated commercial activity."

In order to accomplish these results, he said, the city had been properly acting under its police powers. He said that revenues from meters and overnight permits can properly be applied to the "purchase, development and operation and maintenance" of off-street parking facilities.

Judge Shaughnessy said the revenues "may be earmarked by the city for their contemplated purposes."

The suit's contention that night parking permits "promote an unreasonable and unlawful use of the public streets" was rejected by Judge Shaughnessy as "without merit." The court held that the issuance of such permits to relieve congestion was a power which the common council has a right to exercise.

Toepfer had argued that the parking meter and night parking revenues should be placed in the city's general fund. The two parking funds now total about $691,000 and $858,000, respectively.

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The court specifically upheld the city's right to purchase off-street parking lots at 1120 N. Cass St. and at N. 47th St. and W. North and W. Lisbon Aves.

In another Milwaukee development, the City Common Council declared intent to build a parking structure at the southwest corner of N. Milwaukee and E. Michigan Sts. The Milwaukee Parking Commission was instructed to submit within 90 days preliminary plans for a multistory parking facility on the site. The commission was told to submit cost estimates, income estimates and a program for financing the structure along with its engineering designs.

The site was purchased by the city for $195,000 for parking use. Pending a decision on the projected new building, the city has authorized National Garages, Inc., to continue operating a parking lot at the site.

Other parking action in Milwaukee included abandonment by the council, at least for the present, of a scheme to develop 10 acres of lake front land north of Maitland field as a parking lot. The city harbor commission had offered the area for lease to private parking operators but received no bids.

In still another Milwaukee development, the council's joint buildings and grounds and finance committee approved plans for five off-street parking lots near the Mitchell St. shopping area. The city estimates cost of acquiring and improving the land at $610,000. Merchants in the area agreed to pay benefit assessments totaling $310,000. The balance would come from parking meter and night parking funds of the city.

Harrisburg Studies Aid To Private Enterprise Parking

Controversy is continuing in Harrisburg, Pennsylvania as to whether a solution to the city's parking problems should be left to private enterprise or action should be taken by the city to finance, construct and operate off-street facilities.

At a July meeting with city officials and members of the Mayor's Parking Committee; representatives of private parking lot operators submitted a report indicating they might be able to provide 715 additional off-street parking spaces if their plans could be financed and if the city does not form a municipal parking authority in competition.

Noting that banks would not finance parking ventures on open lots, the parking lot operators asked for aid in financing by business establishments, including four that previously offered to raise $100,000 for a parking solution. Frank C. Foose, representing those who made the $100,000 offer, asked the lot operators to submit the proposition formally and promised it would be given "due consideration."

The Harrisburg City Council earlier said it would study possibility of providing additional off-street parking facilities through financial aid to existing privately-owned parking lots and garages. The suggestion was submitted to the council by its own parking committee, which recommended:

"After further study, this committee recommends that because of the extensive need for off-street parking that the mayor and council immediately initiate concerted effort with the off-street parking lot operators to expand their facilities to help meet the demand for additional parking space due to growth of the city and its business activity."

Mayor Claude Robins said he interpreted this as a proposal to give financial aid to parking lot operators through a parking authority. The committee's action was seen as supplemental to its previous recommendation for creation of a parking authority and suggestion of sites for parking facilities. Parking authority proposals thus far, however have been strongly opposed by private lot operators.

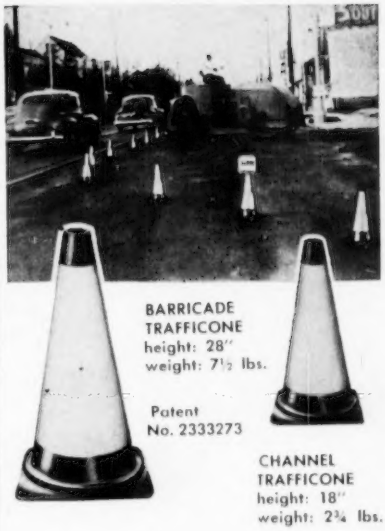
Topeka Will Operate Parking Garage and Lot

Topeka city commissioners meeting in July were advised by Ramp Buildings, Inc., of New York, that their new plans to both build and operate a downtown parking garage and a street-level parking lot would be feasible.

The company was asked to review the project in the light of a recent Kansas State Supreme Court decision outlawing a contract the city had with Park and Shop, Inc., local merchant's organization, under which the latter would have operated the garage and lot after the city built them.

Following the court decision, the city commissioners decided to operate the facilities as well as to build them. Ramp Buildings was asked for a new opinion as to whether it still would be a good deal for bond buyers.

The New York firm said it would be economically feasible provided merchants proceed, as they plan, to pay the parking charges of their customers. This "validation" program is essential to the



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- 36-page Traffic Manual goes into every phase of traffic problems.
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- Selected by traffic engineers for the toughest traffic control tests.
- Saves money by eliminating the rebuilding of old fashioned wood and wire markers.

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- Two sizes
  28" — Barricade
  18" — Channel
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  Red, yellow, black.
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- Require minimum storage space.
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- Require less man and motive power.
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Please write for complete information on how to increase the effectiveness of your traffic controls. 36-page manual and colorful literature available.

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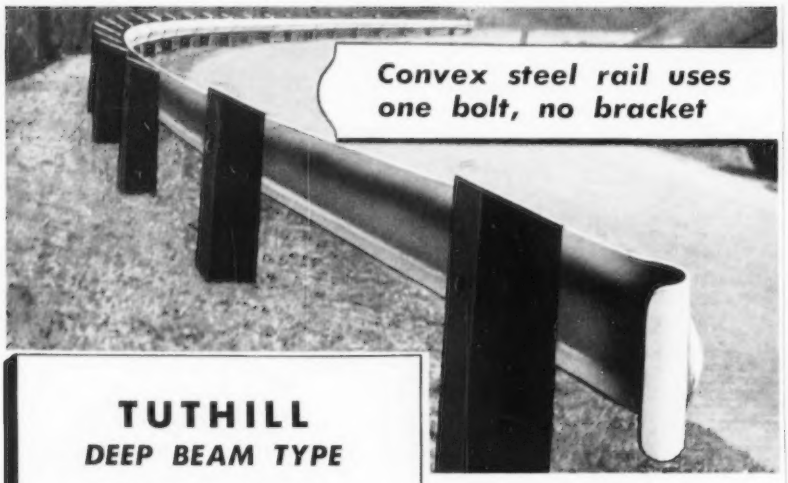

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GUARD RAIL
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deflects cars safely

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financial success of the parking project, it said.

Ramp Buildings estimated the city's parking meters will produce gross revenue approximating $120,000 a year and net revenue, after maintenance costs, of $70,000 which would be left for application to revenue bond payments. Under the parking enabling law, net revenue from the meters is pledged to pay off the bonds if income from the parking facilities is insufficient.

The city plans to issue $1,200,000 of revenue bonds to purchase the sites, level them and build the garage and lot. The four-story, ramp-style garage will be built at Seventh and Jackson and the street-level lot on the west side of Quincy in the 600 block.

Topeka has authority now to issue up to $2,000,000 of revenue bonds. The remaining $800,000 may be used later to put in two more street-level lots after officials get some experience operating the first two facilities.

Please Mention
Traffic Engineering
When Writing Advertisers

Signal Pioneer Adler Honored

Charles Adler, Jr., (Affil., ITE) inventor of the first traffic-actuated signal and pioneer in the field of traffic control devices was honored by the Automobile Club of Maryland at a luncheon at Baltimore's Park Plaza Hotel on June 10.

Mr. Adler's actuated signal was installed by the Maryland and Pennsylvania Railroad at the intersection of its tracks with Glenarm Road at Glenarm, Maryland, February 25, 1921.

The first device was actuated by approaching railroad traffic, causing a double "stop" sign to be displayed to the highway 20 seconds before the vehicle on the tracks reached the crossing. One of the vehicles on the railroad which caused actuation of the signal was an automobile equipped with railroad wheels used for inspection trips.

Mr. Adler's development was described and illustrated in the Baltimore American of October 15, 1920, shortly after it was invented. It was also illustrated and completely described in the March 15, 1921, Popular Mechanics.

Seven years later, on February 22, 1928, the Baltimore Police Department placed in operation at the intersection of Falls Road and Belvedere Avenue, Baltimore, another of Mr. Adler's traffic control devices. This signal was actuated by the blowing of an automobile's horn. The Evening Sun of that date said in part, "The new traffic control device, whereby the 'go' signal burns steadily on the main thoroughfare to be changed to permit cross traffic only when a horn is blown near its microphone . . . (was) invented by Charles Adler."

POSITIONS AVAILABLE

HIGHWAY
PLANNING ENGINEER

400,000 population county adjacent to Detroit. Requirements include degree in civil or traffic engineering plus either advanced studies or at least one year of experience in highway or traffic engineering work. Applicant must have experience with analysis of Origin - Destination surveys.

Apply: Carl G. Johnson, Director, Personnel Division
Oakland County Board of Auditors,
No. 1 Lafayette Street
Pontiac 15, Michigan

STATE ROAD DEPARTMENT
OF FLORIDA
TRAFFIC AND PLANNING
ENGINEERS

To accept responsibility for traffic engineering and geometric design with but little supervision. No knowledge of signs and signals required.

Qualifications: Age 30-50 with a B.S. degree in Engineering, or equivalent experience; some experience in traffic surveys and origin and destination analysis; those with some experience in design preferred.

For further information contact:
M. A. Conner
Engineer of Traffic and Planning
State Road Department
Tallahassee, Florida

CITY OF HAMILTON, OHIO
TRAFFIC ENGINEER

To head 4-year-old traffic engineering division in city of 60,000 population.

Requirements: Graduate engineer or equivalent, practical experience with comprehensive familiarity planning. Salary $4560-$5760 per year.

Apply: Charles F. Schwalm
City Manager
Municipal Bldg., Hamilton, Ohio

Miscellanea

Although we have had no comments favorable or otherwise from the readers, we believe this new department, conceived by our erstwhile Business Manager (see Secretary's Column) as real merit and we plan to continue it so long as circumstances permit . . . it is designed as a spot to report the doings of the Institute membership . . . and of the ITE profession . . . personals and impersonals. If the readers agree, how about dropping us a note . . . also giving us news, tips and tidbits . . . remember that the mail, telephone, and occasional visitor to the Yale Bureau are our only contact with the grapevine.

BPR reports 1953 registrations added 6% to the 1952 traffic jams — autos 46.46 million, trucks 9.575 million, buses 244 thousand; total 56,279,864 . . . motor vehicle travel estimated at 540 billion vehicle miles, 5½% over 1952 . . . 1953 travel was 62% greater than in 1941 as compared with a gain of 61% in motor vehicle registration . . . Los Angeles Chamber of Commerce says 35% of all of Los Angeles' Conventioneers arrived via Air Lines . . . 1950 figure was 13%.

"Neither heat nor rain, nor sleet nor snow, nor gloom of night shall stay these couriers from the swift completion of their appointed rounds" . . . nor Post Office buildings stay engineers. Engineering News Record June 24 recounts how Chicago engineers tunneled new 8-lane Congress Street Expressway through 21 year old 13 story Post Office building. Building alterations cost $1,328,000 . . . Hugh Wynn (Mem., ITE) left Yale Bureau faculty to join Wilbur Smith and Associates July 1 . . . his HQ remains in New Haven . . . Smith and Associates recently signed joint contract with Parsons, Brinckerhoff, Hall and MacDonald to undertake one of the largest traffic and earnings reports to date . . . proposed 460 mile toll road system for State of Illinois . . . Wynn and Curt Hooper (Mem., ITE) of Parsons, Brinckerhoff, will supervise $275,000 job . . . Chuck Pratt (Jun. Mem., ITE) of the N. J. Bureau of Traffic Safety, and Tom Walbert (Mem., ITE), formerly with AEC Savannah project, latest additions to Smith et al staff . . . Hank Evans (Mem., ITE) continues a prolific writer . . . his latest is "6 Bargain Steps to Smoother Traffic", appearing in Nation's Business magazine for July . . . limited number of reprints available upon request . . . Hank doesn't let TRAFFIC ENGINEERING have any of writings now that he's found out other editors will pay him good money . . . the competition in this business continues to get tougher . . . Bryan Wilson, of the Wisconsin AAA, evidently hasn't heard about this for he recently sent us — absolutely free, return postage guaranteed — the following which is published in full:

I Have Chosen My Own Epitah!

By Bryan Wilson, (Mem. ITE)

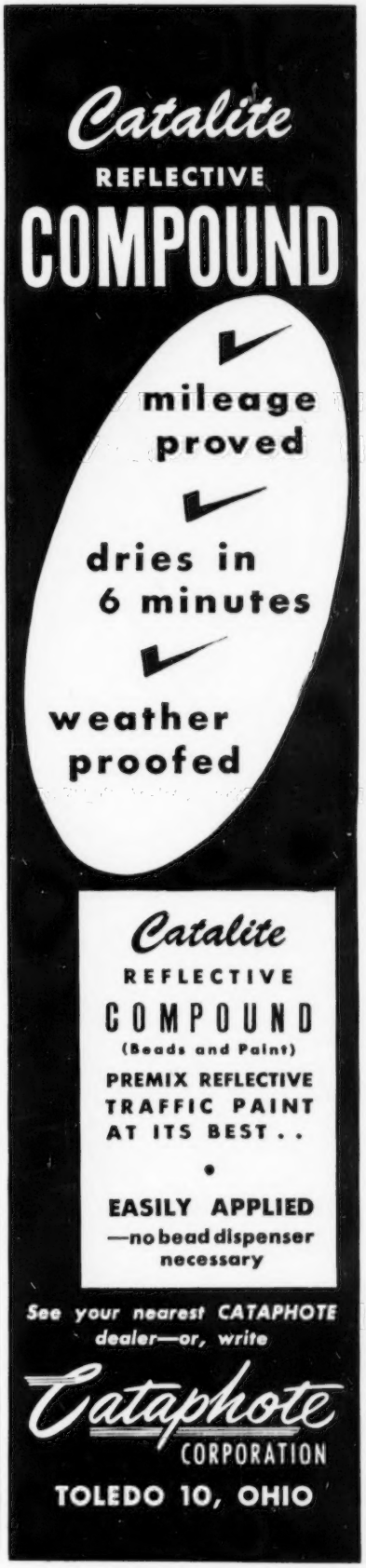
Traffic Engineer
American Autmobile Association
Wisconsin Division, Madison, Wisconsin

IT IS HIGHLY PROBABLE that a Traffic Engineer has more ulcers per square inch of stomach surface than any other professional man in the world. When it is considered that in addition to these he daily fights pressure groups, consoles taxpayers, berates selfish commercialism, argues futilely that the primary purpose of a street is to transport persons and goods, tries to synchromize signal systems with obsolete individual controllers and searches vainly for parking sites within acceptable walking distance of trade areas, it is small wonder that he is occasionally the victim of sombre moods, and that thoughts of the peace and isolation of the grave should sometimes intrude.

I got into one of those moods only recently while trying to relax with some of Dr. Greenshield's work involving Poisson's Theories and the Taylor Theorem. "Ha! Calculus!" I exclaimed, after thumbing rapidly through a few pages.

Presently, I was aware of puzzled puckers in my forehead, and the engineer's yen to learn finally forced me to my old textbook on that subject. Presently, I got out my Analytic Geometry, my Trigonometry and College Algebra. Nothing seemed to make sense, so I finally found a few problems in simple arithmetic for Grade 2 which make delightfuliy easy reading. With satisfaction I chose a problem which queried: "What is the sum of 2 plus 2?" I came up with the answer like a flash. It was 4. Then I remembered that 2 is a constant, and that the derivative of a constant is zero. Therefore, I had zero plus zero equals zero, which was true, but did not equal 4.

Resolving at some future time to question Wilbur Smith on this obvious



disparity in mathematics, my weary brain turned blithely to thoughts of the grave; thence, with an engineer's logic, to the tombstone; thence to the legend or epitaph on the stone.

I began reflecting on the choice of a fitting legend, first trying to confine it to between three and five words, realizing that at modern speeds only about three words may be read and that the driver actually doesn't give a damn about those three. However, it soon became apparent that I couldn't dismiss all the distorted works of my life with a mere three words. After all, I reasoned, anyone in a hurry wouldn't be in the cemetery anyway!

In thrashing vigorously around in my mind for a legend of any length whatsoever, I recalled that when I was with the Kansas State Highway Commission I became sold on the accident-reducing value of over-size signs to such an extent that the Maintenance Engineer, who had to pay for them out of the funds from his department, sarcastically referred to me as "Over-size Sign Wilson $47.62", the latter being the cost of the sign. Still later, I became obsessed with the value of rural speed zoning, and plastered the highway system with them. I was then referred to by the same source as "Over-size Sign, $47.62, Speed Zone Wilson". Eventually, after working in Wisconsin for two years during which the bulk of my work has been the location of parking sites, I felt that another adjectival phrase might be used and that I could rightfully be called "Over-size Sign, $47.62, Speed Zone, Parking Lot Wilson".

At that instant, a bright light (mercury vapor) penetrated the dark region of my cerebrum and, after, through long habit, determining its chromacity, calculating the maxima and minima to see if the light were at its proper height for greatest efficiency, forming the equation, platting it, finding the slope by taking the derivative, determining the normal and locating critical points, I yelled, "Eureka!" thus associating myself with the old boy who took a bath a few centuries ago.

From all this mental floundering I came up with this sought-after epitaph, and if you're ever in this part of the country at some problematical time in the future you may see a tombstone shaped in the form of our uniform stop sign, octagonal and over-size, with this legend shining from its scotch-lite surface:

SLOW TO 25 M.P.H.
HERE LIES OVER-SIZE SIGN, $47.62,
SPEED ZONE, PARKING
LOT WILSON, WHO HAS
SUCCEEDED IN LOCATING HIS
FINAL OFF-STREET PARKING
FACILITY

Note: 6" letters, reflectorized for night driving.

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MISCELLANEA—*Continued*

Jim Darrell (Mem., ITE) moves upstairs with recent shake-up in Minnesota Highway Department . . . he's now Director of Traffic and Planning, MHD . . . his former assistant, Bill Klett (Assoc. Mem., ITE) now hold title, Traffic Engineer . . . congrats to both. Jim helped Institute out of a tough spot by pinch hitting a bang up presentation of the 1953 TE achievement Award for Group VIII cities to Wausau, Wisconsin July 21 . . . Governor Kohler attended the grand slam Award luncheon with several members of his official family.

Bruce Greenshields (Mem., ITE) now Yale Bureau Research Associate working on the development of an index of efficiency of the traffic transmission of streets . . . project could be termed method of measuring congestion . . . he's on leave until next February from his Professorship at George Washington University . . . incoming Yale Bureau class numbers 31 . . . includes Eugene J. Clifford, Earl C. Williams, Jr., Hilliard D. Humphrey, all Jr. Mem., ITE . . . John L. Gallagher, Jr. (Jr. Mem., ITE) will make it 32 if he decides to accept appointment.

H. R. Perkinson, Jr. (Assoc. Mem., dent . . . his latest "Speed Laws Re-examined in Virginia" in February Public Works magazine . . . Professor C square Wiley, elected Honorary Member, ITE last September, has been similarly honored by Midwest Section . . . now that John Leek (Assoc. Mem., ITE) has returned to Research and Planning Bureau, Illinois Highway Department, Professor Wiley will resume role as Faculty Advisor to U. Ill. Student Chapter . . . Note from John C. Henberger (Assoc. Mem., ITE) reproves our record keeping . . . recently issued Yearbook lists him as San Diego's Assistant Traffic Engineer . . . actually, he replaced Glenn Johnson as Western District Manager for the A'G'A company a full year ago . . . Johnson transferred to home office . . . George Goodwin, Executive Director, Central Atlanta Improvement Association, wrote in recent Newsletter: "*OTHER CITIES*: During two weeks vacation up the Atlantic coast, *C. A.* executive director found some cities better, many worse than Atlanta in handling traffic. Atlanta Traffic Engineering Department has proved tremendously effective in comparison with cities having less emphasis there. *Limitation of street parking and strict enforcement of parking regulations seems to be the key to better traffic flow in some larger cities.* Conversely, absence of these factors is clearly the cause of congestion in smaller cities. Glamorous traffic facilities (Manhattan Parkways, New Jersey Turnpike, New York Throughway) are not vastly superior to Atlanta expressway and Highway 41 between Marietta and Cartersville except in three important particulars. Much more care has been given to design and location of *interchanges*; *traffic lanes* are generally *wider;* and highways are *better marked* with direction signs. There also seems to be greater presumption of driver responsibility in eastern cities and on major eastern highways."

The following Traffic Definitions have been forwarded by Pasadena's Ed Granzow for possible inclusion in the official list:

A PROGRAM—Any assignment that can't be completed by one telephone call.

TO IMPLEMENT A PROGRAM—Hire more people and expand the office.

UNDER CONSIDERATION—Never heard of it.

UNDER ACTIVE CONSIDERATION—We're looking in the files for it.

WE ARE MAKING A SURVEY—We need more time to think of an answer.

WILL ADVISE IN DUE COURSE—If we figure it out we will let you know.

THE ISSUE IS CLOSED—I'm tired of the whole affair.

* * *

What Country?

Recently a young woman who was filling out an application form, puzzled over the line, "Are you a natural born citizen of the United States?" Finally she answered, "No, Caesarean."

Strictly Business

St. Paul's Public Safety Commissioner Peterson, Mayor Dillon and Fire Chief Mattocks examine unique directional antenna mounted on hood of emergency vehicle which sends radio beams to pre-empt control of traffic signals.

St. Paul Tries New Signal Preemption System

A radio emergency traffic control system recently developed by Continental Communications, Inc., Chicago, Illinois, was demonstrated last month to the City of St. Paul, Minnesota, officials under the supervision of the city's Fire Chief Wm. Mattocks.

The equipment, developed by the Chicago firm, was put through rigid operational tests at the company's research laboratories in Chicago and was "life" tested for many months before demonstration was made.

The City of St. Paul installed the emergency traffic control receivers at eight consecutive intersections on Roberts Street (which they consider their most highly congested thoroughfare during peak traffic periods) for the demonstration.

The radio electronic traffic control was set for approximately 2,000 ft. and tripped off intersections four blocks ahead of the on-coming emergency vehicle. The small radio transmitter, Type TC-2, was installed in the Fire Chief's car, under the front seat.

A unique directional antenna was mounted on the hood of the car and a control box installed under the dashboard. When the control box switch was turned to the "On" position, the radio waves would pre-empt the TC-2 control receivers four blocks ahead of the emergency vehicle and one block on either side, turning all four traffic lights at each intersection to "RED." The signal holds the intersection lights at "RED" until the emergency vehicle has proceeded past the intersection for one block. Consequently, all traffic is halted and the emergency vehicle proceeds unhindered.

The St. Paul Dispatch newspaper quoted Fire Chief Mattocks—"The system couldn't be anything but beneficial to the City." He also outlined the dangers to fire cars as they approach an intersection and stated that "many accidents occur at such points." St. Paul's Public Safety Commissioner Peterson expressed a desire to "see the system installed after a study of cost and maximum effectiveness."

The ability of the new radio electronic traffic control to pre-empt the traffic signals at intersections four blocks in advance of a moving emergency vehicle will make it possible for these vehicles to move through intersections with greater speed and safety. This system is not intended to be a complete compendium for traffic control and has been designed specifically to clear a path for emergency vehicles that they may arrive at the scene of any emergency in the *least* amount of time.

Installation of the equipment is simple and does not conflict with existing electrical networks or contemplated modifications of traffic signal control functions.

The radio electronic traffic control equipment designed by Continental Communications, Inc., 452 West Chicago Avenue, Chicago, Illinois, is known as the Type TC-2, and utilizes frequencies approved by the FCC.

Membership Applications

The following applications have been received since the list of applicants published last month.

APPLICATIONS FOR TRANSFER

BARRY, Donald W.
City Traffic Engineer
City Hall
Fort Wayne, Ind.
Jully 9, 1954 for ASSOCIATE grade

CAMPBELL, Bruce
Director of Highway Safety
Massachusetts Safety Council
31 State Street
Boston 9, Mass.
July 6, 1954 for ASSOCIATE grade

CLIFFORD, Eugene J.
415 First Street
Rockville, Maryland
July 15, 1954 for ASSOCIATE grade

NEW APPLICATIONS

COX, James H.
4213 North Ritter Avenue
Indianapolis, Ind.
July 15, 1954 for JUNIOR grade

DESJARDINS, Raymond J.
Planning Engineer
Metropolitan Toronto Planning Board
465 Bay Street
Toronto, Canada
July 20, 1954 for ASSOCIATE grade

DeNOBLE, Henry M.
Director of Planning & Traffic Eng.
City Hall
Lubbock, Texas
July 1, 1954 for JUNIOR grade

GALLOWAY, William G.
Traffic Engineer III
Kentucky Dept. of Highways
Frankfort, Kentucky
July 20, 1954 for JUNIOR grade

McDONALD, John W.
252 Albert Drive
San Luis Obispo, Calif.
July 1, 1954 for ASSOCIATE grade

MILLER, Edwin H.
Traffic Engineer II
Michigan State Hwy. Dept.
Kalamazoo, Michigan
July 21, 1954 for JUNIOR grade

NEWMAN, Eugene L.
Safety Engineer
HQ, AMFE, USAFE
APO 633
c/o Postmaster
New York, N. Y.
June 24, 1954 for JUNIOR grade

PECHT, George A.
5135 N. 127th Street
Butler, Wisconsin
July 1, 1954 for ASSOCIATE grade

RICHAUD, George J.
Superintendent of Roadways
New Orleans Public Service, Inc.
317 Baronne Street
New Orleans 9, La.
July 13, 1954 for ASSOCIATE grade

New Appointment . . .

Thomas J. Seburn, past president of ITE has resigned as Traffic Engineer of Kansas City, Mo., to join the Yale Bureau. The following was clipped from the front page of the June 1st Kansas City Star:

Seburn Quits City Job

Resignation of Traffic Director Is Effective July 31

T. J. Seburn, who molded a modern traffic pattern from a horse-and-buggy system here, resigned today as city traffic director to join the Yale University Bureau of Highway Traffic. His resignation will be effective July 31.

Upon leaving the Kansas City post he has held since 1930, Seburn will have the title of research associate at the Yale Bureau. He said he would engage in practical research, teach and represent the university in national associations on traffic and street lighting.

Seburn, who has been consultant to scores of other cities on traffic control and who has spoken to various groups throughout the country, has lectured at the university several times. The head of the school's bureau of highway traffic, T. M. Matson, has been a friend of Seburn's many years.

"This job in which I can do research work and teach is the only type that would make me leave the city," Seburn commented.

Seburn has been responsible primarily for Kansas City's traffic control measures, which have won national recognition.

Integral parts of that program are the overhead street lights, the highly effective one-way street program, the network of stop lights and signs, the necessary ban on rush-hour parking and the laying out of such vital routes as the South-west trafficway and the widened Forty-seventh street.

When Seburn opened the city's traffic engineer office in 1930 he was a pioneer in a new field of engineering. Not more than ten cities throughout the country had such a unit. That year 101 persons were killed in poorly regulated traffic here.

Since then the toll has been held to one-half that number or less with fair consistency, despite the fact that the volume of vehicles has more than doubled.

Prepared Streets First

His first work primarily was traffic engineering, preparing the city's streets for the increasing flow of traffic.

In the depression there were fewer cars on the streets, and he turned his attention to safety problems. During World War II, conservation of vehicles and fuel was his principal task. He was secretary of the city's war transportation committee during the war.

With the great increase in the number of cars following the war came the big changes in the city's traffic pattern instituted by Seburn. At the top of the list were the elimination of bottlenecks, widening projects and a start on an expressway system.

He was the first traffic engineer in the nation to put into use the all-pedestrian "walk" interval in the traffic light systems downtown.

With Matson, he designed the safety islands now in use here and many other cities. The tapered concrete islands are designed to give maximum protection to the driver as well as the pedestrian.

Moved Here in 1926

Seburn came here in 1926 to accept a position with the Kansas City Public Service company after he was graduated with a degree in civil engineering from the University of Michigan.

Seburn met Matson three years later when the latter, a civil engineer, came here to conduct a traffic survey for the city. Officials in the field were volunteered by their employers to work in the survey and Seburn was among those who participated. He worked on the survey with Matson eleven months.

In his report following the survey, Matson recommended the city hire a traffic engineer. Seburn was hired December 18, 1930.

Now Seburn will be associated with Matson. Both men have worked in traffic control projects with Dr. Miller McClintock, who previously headed the bureau at Yale and who employed Matson in the survey here in 1929.

McClintock recommended as "bright, young fellows" Seburn and G. H. Frieling to the Public Service company on their graduation from Michigan. Frieling now is vice-president in charge of transportation for the company.

Seburn, 52 years old, is married and has a daughter, Miss Barbara Seburn. The home is at 428 East Seventy-second street. He is a deacon at the Country Club Christian church and president of the Married People's Sunday School class there.

you get LOW-COST,
ONE MAN OPERATION
with a JAWCO
LIGHTWEIGHT TRAFFIC LINER!
The JAWCO Lightweight Traffic Liner, with 5 gallon capacity, combines ease of operation with low initial, maintenance and upkeep costs.
One inexperienced man can easily give you smooth, even, straight traffic and zoning lines with a JAWCO Lightweight Traffic Liner.
Inquire today! For further information, delivery date and price, write —
WEAVER MACHINE COMPANY
P. O. BOX 1224 · PLANT OFFICE: 209-215 BUTLER ST. · YORK 1, PA.

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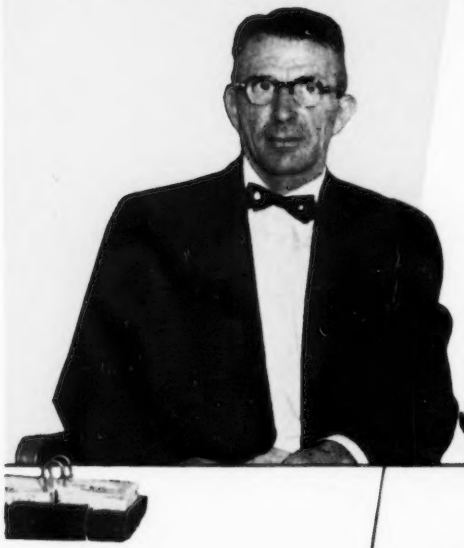


City of PRESCOTT, Arizona

POLICE DEPARTMENT

P. O. BOX 1088
PRESCOTT, ARIZONA

M. N. CHAFEY
CHIEF OF POLICE

W. R. RUSSELL
ASST. CHIEF OF POLICE

ADDRESS ALL COMMUNICATIONS TO CHIEF OF POLICE

May 25th, 1954

James W. Greenbank
El Dorado, Kansas

Dear Sir:

I just want to write a few lines to tell you that we are very happy over the installation of the Traf-O-Teria system in our city, not only for the convenience that it provides the motorist, it is a great builder of public relations, which is of prime importance in any Police Department.

Our recovery on tickets at the present time is 95% and the beauty of it is; we seldom hear any gripes, I am enclosing a news clipping from a Phoenix daily. I will be glad to give you a letter for publication to advertise your product should you desire such.

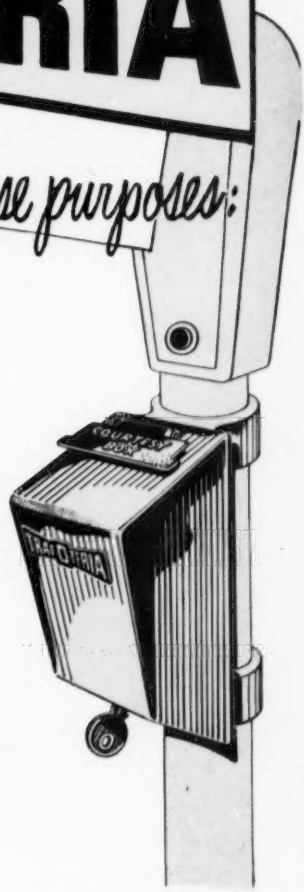
Very truly yours,
M. N. Chafey
M. N. Chafey
Chief of Police
Prescott, Arizona

TRAF-O-TERIA

SYSTEM _designed to fulfill these purposes:

1. Build good will in the community
2. Collect overparking fines painlessly
3. Increase respect for law enforcement
4. Increase the percentage of fines paid
5. Increase net revenue from parking fines
6. Increase voluntary payments by visitors
7. Reduce collections and handling costs
8. Improve the total parking control system

the Only Proven System for Friendly Control



Traf-O-Teria System (Dept. T)
El Dorado, Kansas

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Letter to the Editor

Dear Sir:

After reading the article by Mr. Nowell on the barrier system toll road in the May issue of TRAFFIC ENGINEERING magazine, I feel moved to voice some comments on this article. I would like to preface these comments by stating that they do not and should not be taken to represent the official views of the Kentucky Department of Highways but are my own views as a practicing traffic engineer.

The barrier system for toll roads referred to in the article mentions the Connecticut and New York parkway systems and refers to the Garden State Parkway in New Jersey. Although I do not know about the New Jersey parkway, I do know that the Connecticut parkway system does not allow commercial vehicles on that part known as the Merritt Parkway. I am not sure about the Wilbur Cross section of the parkway but the point is that a parkway, as far as I know, does not allow commercial traffic. This is one of the major revenue producing traffic classifications for toll roads.

Answering Mr. Nowell's points in the order he set them out, I would like the following comments to go on record:

1. Barrier Roads are Safer: The major point brought out in the May article is that barrier roads reduce the tendency for "driver hypnosis." The barrier toll booth straddling the turnpike would cause drivers to stop periodically; possibly from 20 to 50 miles, and might increase the tendency for rear end collisions at the toll stations. The italicized statement "the big advantage of barrier toll roads in this respect is that the motorist is not allowed to drive for hours on end." I can certainly agree with this statement. One reason toll roads have received such tremendous usage is that people do not wish to stop periodically for cross roads, traffic signals, etc. The stopping of traffic to pay tolls at barrier type booths would reduce the average trip speed and increase the time which would be necessary to travel the toll road. In addition to this, the limited access type roadway has capitalized, and rightly so, on the thoughts that operating expenses are reduced by reducing the number of stops and corresponding wear and also the number of starts with the increased gasoline consumption.

In regard to changing weather conditions, unless high intensity lighting, which incidentally, is expensive, were used heavy fog might hide the barrier type toll booth and result in collisions with the toll booths and with other vehicles.

2. Barrier Toll Roads Discourage Fraud: No argument on this point.

3. Barrier Roads Cost Less to Build: This may or may not be true as bridge structures for grade separations would still be necessary to carry over intersecting roads at access points unless the cross road either dead ended or crossed the toll facility at grade.

4. Barrier Roads are More Acceptable to Local and In-State Residents: It is my understanding that, in general, toll roads are expected to pay their own way as well as giving a high type limited access facility to through traffic. If local traffic is to be accommodated free on toll facilities then, in effect, you have another high type facility which may be compromised by the tremendous volume of local commuter traffic which by using the free portion of the road will certainly be very heavy. In regard to the citizens of towns along the right of way, toll facilities usually are thought of as roads which are not affected by local interests such as business areas, etc. It is recognized that it is necessary to provide service facilities including sleeping establishments to the motoring public but any existing toll facility, by its very nature of drawing traffic from metropolitan areas, usually has access interchange areas at or near every town of any size along its route.

In conclusion, I would like to say that the increased safety is debatable, the prevention of fraud is an unknown factor to this engineer, and the economy plus greater local approval, as set forth in the article, may compromise the basic reasoning, as I understand it, for the construction of turnpike facilities. It is felt that the parkway is a distinctive type of toll facility which normally has best chances for success where traffic is restricted to passenger automobiles and the location is in or near high density population areas. It is felt the turnpike is designed for an entirely different reason; namely, to give a high type limited access facility for through traffic which does not wish to be bothered by stopping every 20 or 30 miles and certainly wants to be separated from local traffic at every population area.

JOSEPH F. RICE
(Junior Member, ITE)
Lexington, Kentucky

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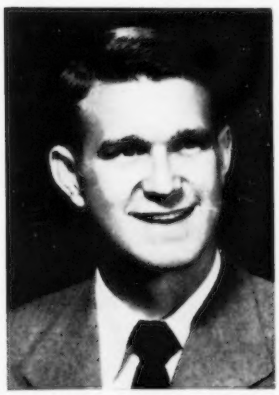
Secretary's Column

In the rush of trying to get out the last issue, while dealing with the detailed work incident to the Board's June meeting, I did not have an opportunity of paying my respects to the young man whose name has been adorning the masthead as Business Manager of this magazine for the 11 preceding issues — Samuel G. Nowell, Jr. Sam joined our staff on August 1, 1953, following his graduation as a Sanitary Engineer from Pennsylvania State University. During the past spring his home town Selective Service Board at Hollidaysburg, Pennsylvania, became increasingly insistent that his services would be of value to his country's armed forces, whereupon Sam resigned his position June 25th, went home and applied for immediate induction. On Monday, July 12th he was sworn in as a Private in the U. S. Army.

Although he was a member of this staff only 10 months he did a job which earned the respect not only of his fellow workers here at Headquarters but of almost everyone with whom he came in contact as well. Not until he had gone and I had to resume the burden of attending to the myriad of routine details necessary to publish a monthly magazine did I fully realize what truly fine work he had done. Work with a magazine is never ending; while the proofreading and mechanical make-up problems of one issue are being solved, assembling material, writing copy, writing headlines, sizing reproductions, in addition to checking insertion orders, advertising plate deliveries, special ad tie-ins, etc., for the next issue must be carried on. At the same time the business of invoicing, costs and adjustments for the issue just distributed must be attended to as well as the special task of putting that issue into the hands of the contributors, advertisers, and people to whom some feature material might be of special significance. In short, we usually are dealing with three issues at the same time; distribution of one merely advances the process another notch.



Samuel G. Nowell, Jr.

I believe the readers will agree that notable improvement took place during Sam's tenure. Several new departments, mostly concerned with the business end, were successfully started; the Shopping Center and Strictly Business to name only two. Unfortunately, Sam's departure will force discontinuing the Shopping Center until such time as a replacement for him can be found. I hope to continue the Miscellanea column which he started, as well as the practice of maintaining a minimum of 48 pages per issue which an increased advertising business made possible.

Yes, Sam Nowell will be missed by this magazine and the Institute which employed him. His willingness, eagerness to please, interest, industry, and unfailing good humor are assets we can ill afford to lose. We wish him well in his future undertakings and are persuaded that the talents with which he is endowed will carry him far.

TIM TODD

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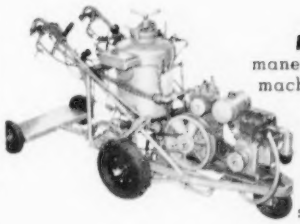

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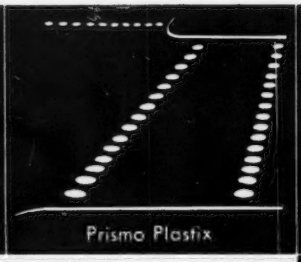
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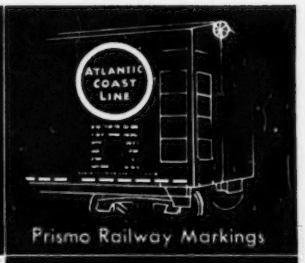

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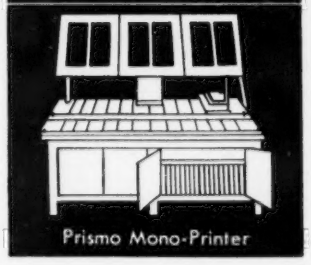
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